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Original Articles

THE DIAGNOSIS OF EXOPHTHALMIC GOITER.*

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BALTIMORE.

The part assigned to me in this symposium is the diagnosis of this remarkable disease. What I shall have to say is based (1) on an analysis of the cases which have occurred in my wards at the Johns Hopkins Hospital during the past two years,[1] and (2) on a study of the bibliography of the subject.[2]

It will be convenient to discuss (I) the character and significance of the individual signs and symptoms; (II) the diagnosis of the clinical syndrome, especially in its less obvious forms; (III) certain points in differential diagnosis, and (IV) the diagnosis of the indications and contraindications for surgical interference.

On account of the necessity of brevity I am forced to limit the discussion to the features which I regard as most essential.

I. THE CHARACTER AND SIGNIFICANCE OF THE INDIVIDUAL SIGNS AND SYMPTOMS.

Besides the three cardinal symptoms—struma, tachycardia and exophthalmus—there are a very large number of other symptoms and signs to be considered, some of them more important than the exophthalmus as diagnostic aids because more frequent and characteristic.

A. THE STRUMA OR GOITER.

The thyreoid gland is enlarged in the majority of cases of the disease. Since we have been taught how to recognize slight enlargements, the reports of exophthalmic goiter without goiter have grown fewer, and some go so far as to deny the existence of an exophthalmic goiter without struma. It does exist, however. In twenty-one of my cases a struma was recorded in the notes dictated at the ward rounds in eighteen. The whole gland is, as a rule, uniformly involved, giving rise to the well-known horseshoe-shaped projection, but one lobe may be larger than the other. The struma is not large as a rule; the patient may even not have noticed the thickening of the neck. The isthmus of the gland is usually broadened and thickened and the pyramidal lobe is enlarged. The consistence varies according to the stage of the disease and according to the acuteness or chronicity of its course. At the beginning and in cases running an acute course it is often softer than normal; later on, and in chronic cases, the consistence is firmer and more elastic. A characteristic feature is the granulation of the surface, usually easily recognizable on palpation and due to the lobular hyperplasia. Most important, from the diagnostic standpoint, are the vascular peculiarities of the goiter. The typical struma in exophthalmic goiter is always a struma vasculosa. The telangiectasis is recognizable (1) by the visible pulsation of the goiter, (2) in many instances by the palpable systolic expansion, (3) by the palpable thrill, and (4) by bruits audible at the point of entrance of the thyreoid arteries (especially the superior) into the gland. The struma, though usually recognizable by the educated touch of the physician's finger early in the disease, is mentioned by only about one-fifth of the patients as preceding the other symptoms.

B. THE TACHYCARDIA OR (BETTER) PYCNOCARDIA.

In the semiotic trinity the increased frequency of the heart beat is the most constant and most important sign. The pulse rate is practically always over 90 and may exceed 200 beats to the minute. A rate between 110 and 150 is very common, and the patients usually notice subjective palpitation; sometimes they complain of it bitterly. In my experience this exquisite thyreotoxic phenomenon is usually continuous and persistent. In a few cases, however, I have seen it irregularly or intermittently present. In one it was always precipitable in the early part of the disease by psychic influences and became continuous later. Very rarely pycnocardia is absent when other signs of the disease are present, and then, as Dr. Emerson has shown, the sign may sometimes be brought out by the administration of a few doses of thyroid tablets.

C. THE EXOPHTHALMUS.

This sign is the most striking of all to the casual observer when it is present. It is entirely absent in about one-third of the cases, and even in many of the other two-thirds it may be so slight as not to attract attention. It is necessary to distinguish between apparent exophthalmus due merely to widening of the palpebral fissure and true protrusion objectively demonstrable as a shortening of the distance between the supraorbital margin of the frontal bone and the anterior pole of the eyeball (measurement with exophthalmometer). The former is, as a rule, a more important factor in the changed facial appearance than the latter. The prominence is usually bilateral and continuous; it may be unilateral and the intensity may vary from time to time.

D. PHENOMENA PERTAINING TO THE MUSCULAR SYSTEM.

The tremor noted by Trousseau and Charcot really ranks in diagnostic importance along with the pycnocardia and the struma; it is so frequently present that

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1. I have to thank Drs. Roger Morris and Benson A. Cohoe for help in the analysis of the material.

2. Especially helpful articles are: Moebius (P. J.): Die Basedow'sche Krankheit., Wien, 1896; a new edition has recently appeared with a very full bibliography. Buschan (G.): Die Basedow'sche Krankheit., Eine Monographie, 8°, Leipsig u. Wien, 1894. Kocher (A.): Ueber Morbus Basedowi, Mitt. a. d. Grenzgeb. d. Med. u. Chir., Jena, 1902; ix, 1-304. Dock (G.): Clinical observations in exophthalmic goiter, Am. Med., Phila., 1906, xi, 271-281. Kocher (T.): A contribution to the pathology of the thyroid gland, Brit. Med. Jour., Lond., 1906, i, 1261-1266.

one inclines with Marie to designate it as a fourth cardinal sign. The tremor is rapid and vibratory, there being as many as eight to ten oscillations per second, in marked contrast with the slow tremor of paralysis agitans. It is best seen by asking the patient to hold his hand with widespread fingers between the observer and the light. The tremor may be limited to the extremities, but frequently involves also the muscles of the neck and trunk. It is not exaggerated by voluntary movement, but is increased by psychic excitation. Paresis, paralysis or atrophy are occasionally seen. In how far they are related to the fatty change in the muscles described by Askanazy is not known. Sudden "giving way of the legs" may be an early symptom.

E. PHENOMENA PERTAINING TO THE DIGESTIVE APPARATUS.

Diarrhea and vomiting, both without apparent cause, are not infrequently troublesome symptoms in advanced stages of the disease. They are rare, however, at the beginning and are, therefore, of little help for diagnosis. Other abnormal phenomena, noticeable in the digestive apparatus, are too rare and inconstant to be of much diagnostic value.

F. PHENOMENA PERTAINING TO THE RESPIRATORY APPARATUS.

Here dyspnea is the most important phenomenon. It is usually a late symptom, present in relatively few cases, and generally cardiac in origin.

The respiratory curve as recorded by graphic methods is flattened (Hofbauer). The lessened expansion of the thorax (Bryson's sign) is probably due to weakened muscles and is of no special diagnostic importance.

I would call attention to air-hunger and the peculiar fruity odor of the breath occasionally present in advanced cases; these are important, not for the diagnosis of the disease itself but as indicating the existence of acidosis which may call for an immediate therapeutic effort.

G. PHENOMENA PERTAINING TO THE UROGENITAL APPARATUS.

Here there are no constant findings. Polyuria, glycosuria, transient albuminuria are only occasionally met with. The urea-nitrogen, the total nitrogen, the uric acid and the phosphates of the urine are increased corresponding to the accelerated metabolism in this disease. A diminution of the menstrual flow is a very common accompaniment of exophthalmic goiter in women. The breasts occasionally show changes, usually of rejuvenation.

H. PHENOMENA PERTAINING TO THE CIRCULATORY APPARATUS.

The tachycardia, the most helpful of the signs for diagnosis, has already been mentioned. But the heart shows other changes also. The heart sounds are strongly accentuated, and accidental systolic murmurs, due to the excited and accelerated action of the heart, are frequently audible both at apex and base. The right ventricle appears to be especially affected, and its excited action can be recognized by palpation to the left of the sternum. In advanced cases the heart is not infrequently dilated. The cardiac condition varies with the intensity of the thyreointoxication, and is a valuable criterion for judging of the latter.

The radial pulse is usually small and quick. Arrhythmia is rare except in advanced cases or where the heart is otherwise diseased. The maximal arterial pressure varies. It is sometimes low, but more often higher than normal, and occasionally very high. The pulse pressure (difference between maximal and minimal pressure) may be large, indicating a large systolic output from the left ventricle. When this is borne in mind along with the great increase in the heart rate one begins to realize the amount of work done by the heart in this disease.

Throbbing of the carotids and of the abdominal aorta is a sign frequently present, and one of considerable diagnostic import.

Slight edema of the legs, hands or eyelids is common.

The blood shows no constant alterations, though a relative increase in the mononuclear white elements has been noted by some in the differential count.

The slight enlargement of the lymph glands of the neck so constantly seen at operations is only rarely demonstrable clinically by palpation.

I. PHENOMENA PERTAINING TO THE NERVOUS SYSTEM, SENSE ORGANS AND SKIN.

Both the cerebrospinal and sympathetic nervous systems are profoundly affected in the disease, the involvement of the autonomic systems, especially the bulbar, being perhaps most marked. It is surprising how many of the phenomena pertaining to the other parts of the body may conceivably be brought into relation with disturbances of the autonomic neurone-systems.

The psychic manifestations are often pronounced and may be the first to excite suspicion as to the diagnosis. Feelings of restlessness and discomfort, an indefinable anxiety or apprehension without cause and rapidly alternating moods are very characteristic. One of my patients gradually became so irritable and violent that his wife, not knowing the cause, had him before a magistrate and bound over to keep the peace. Another became so anxious and disturbed that she lost confidence in herself and had to be sent temporarily to a closed institution pending the passing of the psychosis. Even hallucinations or persecutory ideas may develop. Insomnia is frequent and headache also. Vertigo is less common, delirium rare. Pains in the neck or jaws, and shooting pains in various parts of the body are occasionally complained of. A subjective sensation of heat in the body, independent of fever or of the external temperature, is a common symptom. At the beginning of the disease a feeling of weakness, so strong as to interfere with work, is present in many cases; easy fatigability, in young people especially, should excite suspicion.

The eye signs are among the most interesting. The pupils are usually equal and react to light, though with unilateral exophthalmus one pupil may be larger than the other. Aside from the exophthalmus and widening of the palpebral fissure, the most important signs here are (1) the failure of the upper eyelid to follow the eyeball normally in looking downward (v. Graefe); (2) the retraction of the upper lid on straight-forward vision, revealing some sclera above cornea (v. Stellwag; Dalrymple); (3) the infrequent and incomplete involuntary winking (v. Stellwag); and (4) the inability to hold the eyes in the position of convergence (Moebius). Other signs such as (5) the difficulty of everting the upper lids (Gifford); (6) the pigmentation of the upper lids (Jellinek and Rosin); (7) the failure of the forehead to wrinkle on looking up (Joffroy); (8) epiphora or overflow of tears; (9) the tremor of the eyeballs;

(10) the subjective feeling of pressure behind the eyes (A. Kocher); and (11) abnormal dryness of the eyes, are occasionally met with. These signs, dubbed "fancy signs" by my colleague, Dr. Thomas, who fears a neglect of the cardinal tetrad through a search for the novel, are not without their diagnostic value; the presence or absence of all eleven may be determined in a few moments and a clue quickly gained to the unraveling of a condition which might, otherwise, easily escape detection.

The organs of hearing, smell and taste rarely present abnormal symptoms or signs. In the integumentum commune, however, important phenomena are observable. The skin is nearly always smooth, delicate, thin and moist. Sweating is constant and troublesome in a majority of the cases and accounts for the well-known increased electric conductivity of the skin (Vigouroux's sign). Vasomotor instability in the skin is a prominent feature, and the physician when making his first physical examination of the patient is often struck by the blotchy erythema of the neck and upper chest. Pigmentation is the other most important cutaneous sign; the color of the skin may resemble that seen in pernicious anemia, or it may approach that of Addison's disease. The nature of this pigmentation may perhaps not be understood until we are better informed regarding the chromaffine systems of the body. Falling of the hair is more common than prematurely gray hair (canities præmatura), though both are met with.

K. PHENOMENA PERTAINING TO THE GENERAL METABOLISM.

Clinicians have long since noticed the marked tendency to emaciation despite liberal feeding in exophthalmic goiter. A loss of from 20 to 50 pounds in weight during a short period is not uncommon. The body-weight curve is important as a clue to the speed of the metabolic reactions, and thus for judging of the intensity of the disease. The metabolic disturbance consists of an acceleration of the oxidative processes (Fr. Müller; Magnus-Levy); in doubtful cases in hospitals a determination of the oxygen intake and of the CO_2 output by the Zuntz-Geppert method is a diagnostic aid, though it is too inconvenient for use in private practice.

The occurrence of melluria in the disease has already been referred to. Slight fever was noticed in several of my cases. Whether or not such fever is due to a disturbance of heat-regulation, which is a part of the disease proper, is not known. It may depend on complications.

II. *THE DIAGNOSIS OF THE CLINICAL SYNDROME, ESPECIALLY IN ITS LESS OBVIOUS FORMS.*

The diagnosis in typical cases of the well-developed disease could scarcely be overlooked except by an untrained or superficial observer. The coexistence of pycnocardia, struma and tremor, with or without exophthalmus, are decisive. It is in the beginning of the disease and in the atypical cases, including the so-called *formes frustes*, that some difficulty may be encountered. Once the clinician, however, has learned to recognize a beginning struma vasculosa, and to realize the significance of the so-called hyperthyreotic equivalents, especially the thyreotoxic form of the goiter-heart, the thyreotoxic neuropathic and psychopathic states, and the thyreotoxic acceleration of oxidative metabolism, he will rarely be left in doubt. It may in some instances be possible to unmask a latent hyperthyreodism by the administration of a few doses of iodothyrin or by a Zuntz-Geppert estimation. It should be borne in mind that nearly all the phenomena of hyperthyreoidism are accentuated somewhat by the recumbent position; this may explain why the patients so often feel worse in the morning than after they have been up and about during the day. It is unusual, even in the mildest forms, not to get at least some hint from the eyes, if the various tests be run through.

III. *CERTAIN POINTS IN DIFFERENTIAL DIAGNOSIS.*

A few words must be said concerning the differential diagnosis as regards (a) strumata, (b) goiter-hearts, (c) exophthalmus, (d) thyreotoxic pseudochlorosis, and (e) the conditions underlying hyperthyreosis and accounting for it.

(*a*) *Strumata.*—(1) Not every acutely developing pulsating struma is an exophthalmic struma; (2) the symptoms of exophthalmic goiter may become superimposed on an ordinary colloid struma, in which event the thyreotoxic symptoms appear to be mitigated (*goitre Basedowifié* of Marie, *struma Gravesiana colloides* or *struma Basedowificata* of Kocher).

(*b*) *Goiter-hearts.*—It seems tolerably clear that the goiter-heart of exophthalmic goiter is a thyreotoxic phenomenon. With Friedrich Müller, I can see no reason for separating from it the milder forms of the thyreotoxic heart (*Kropfherz* of Kraus; *Kardiopathia thyreogenes levis* of His). There is every transition from the conditions in which they occur to the outspoken state. There is force, however, in the argument that the cardiopathies due to the mechanical effect of a goiter (Minnich) be separated from the thyreotoxic goiter-heart. Thus (1) disturbances of the heart due to strumata extending through the superior aperture of the thorax (Kocher), (2) the goiter-heart due to mechanical injury of the venous circulation (Rose's goiter-heart), and (3) that due to interference with respiration (dyspneic goiter-heart of Kocher), would come in this class. Though thyreointoxication may play a secondary part in such cases, it is the diagnosis of the mechanical injury that is all important and should guide the therapy.

(*c*) *Exophthalmus.*—It is usually easy to distinguish the exophthalmus of this disease from other forms of exophthalmus, but mistakes are sometimes made. Protrusion of the eyeballs due to the increase of intracranial pressure (especially in hydrocephalus), to aneurism, sinus thrombosis or abscess (unilateral exophthalmus), or to retrobulbar growths, especially chloromatous masses (Dock) should be remembered. An acute recurrent exophahtlmus due to angioneurotic edema has also been described (Gruss).

(*d*) *Thyreotoxic Pesudochlorosis.*—Wunderlich observed protrusion of the eyeballs in anemic-looking girls. This is often associated with pallor, fatigability, emaciation and accelerated heart action. It was supposed to be due to chlorosis, and the goiter is mentioned in medical writings as a struma chloroticum. Blood examination shows, however, the presence of a normal or excessive amount of hemoglobin, and such patients are doubtless affected with true exophthalmic goiter (Fr. Müller). When they begin to lose weight, to have slight fever and to sweat freely the suspicion of pulmonary tuberculosis may be aroused. Dr. A. D. Atkinson, of Baltimore, recently showed me such a patient; a rapid tremor, a pycnocardia, a suggestive v. Graefe's sign, a normal blood-count and slight enlargement of the thyreoid gland helped to make a diagnosis of hyperthyreoidism certain.

(*e*) *Conditions Underlying Hyperthyreosis.*—Though it is now possible for us as internists to recognize hyperthyreoidism in its very early stages, we realize fully that we are far from understanding the causes of the hyperthyreosis. Hyperthyreosis, like jaundice or fever, may be excited by different causes, and we must from now on try to make out the varying etiology, be it toxic, infectious, reflex, obscure metabolic or still other in nature. In one case recently reported a hyperthyreoidism developed as a result of a metastatic endothelioma in the gland. This raises the questions concerning the justification of the terms "Basedow" and "Pseudobasedow" (Buschan) and of "essential" and "symptomatic" exophthalmic goiter (Moebius), questions which can not well be answered until we have further knowledge.

IV. THE DIAGNOSIS OF THE INDICATIONS AND CONTRAINDICATIONS FOR SURGICAL INTERFERENCE.

An important part of the physician's function lies in the diagnosis of the indications and contraindications for surgical interference. Formerly surgery was resorted to only after non-surgical treatment had been given a prolonged trial without success. The brilliant results of surgical treatment in the earlier and milder forms of the disease (Halsted, Horsley, Kocher, v. Eiselsberg), make it incumbent on medical men to consider operation early and seriously. Though nearly all patients improve on rest, a diet which does not stimulate the thyreoid (milk), sodium phosphate and fortnightly *x*-ray exposures, and although occasionally a patient will get well, very many go backward again as soon as treatment is discontinued. In the very early cases surgery is capable of curing nearly 100 per cent.; even in the outspoken cases almost 75 per cent. can be cured by operations judiciously planned and skilfully performed, and the mortality, now about 5 per cent., can be further reduced. Internal medicine up to this time has been utterly unable to obtain results comparable with these. In the present state of knowledge and practice, therefore, once a positive diagnosis of exophthalmic goiter has been made, it is, in my opinion, the physician's duty and privilege to recommend operation early. I do not say that every patient presenting the v. Graefe phenomenon or an irritable heart should be operated on, but when a persistent pyenocardia associated with a vascular struma has been discovered, or whenever the grouping of symptoms is such as to leave no doubt of the existence of a persisting thyreointoxication, medical treatment, unless markedly beneficial, should not be continued long before operation is advised. The only contraindications in uncomplicated cases are a feeble heart with very high pulse frequency or pronounced psychic excitation; when these are present a brief preliminary medical treatment may be necessary; if the serious symptoms persist in spite of it and indicatio vitalis exist, the dangers should be pointed out and operation resorted to.

And just here a heavy responsibility rests on the physician. Fully as important as the diagnosis of the indication for operation is the choice of the surgeon. The physician should select an operator thoroughly familiar with the anatomy and pathology of the thyreoid and para-thyreoid glands and skilled in the special technic required. Success depends so largely on the formation of a correct judgment as to the amount of the gland to be removed and as to its removal in one or several operations, that the physician must be sure of his surgeon. Aside from the dangers of tetany, if too much gland is removed, hypothyreoidism will result and the patient be doomed to thyreoid-eating or an implantation; if too little (a less serious matter) more of the gland can be taken out later. One thing seems established, that in exophthalmic goiter the symptoms retrogress in exact conformity with the amount of thyreoid extirpated.

At present there is a fair prospect that the treatment of the disease may again be transferred from the surgeons to the physicians. The remarkable results already obtained in a number of cases by Rogers and Beebe through the use of their curative serum give us good reason to hope that a method will ultimately be perfected which will permit the internist to accomplish with his needle what he now asks the surgeon to do with the knife.

MEDICAL TREATMENT OF EXOPHTHALMIC GOITER.*

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A correct estimation of the value of any plan of treatment of a given disease is easy or difficult, possible or impossible, in direct proportion to the closeness with which the disease follows a type. If the disease is acute and typical, the therapeutic value of any measure is readily determined; but if, on the contrary, the course of the disease is chronic and subject to the many spontaneous remissions and exacerbations, it is nearly impossible to reach a just estimate of the value of any plan of treatment. When, in addition to these characteristics, the pathologic phenomena are not sharply separated from physiologic processes, the difficulties opposed to correct judgment are further increased. There is perhaps no disease, the history of which better demonstrates the truth of these principles, than does exophthalmic goiter. An almost unending list of plans of treatment might be prepared and in regard to each the opinions of their value have varied from useful, through useless, to harmful. And to-day, although there are many reasons for the belief that we are at last approaching an adequate conception of this disease, there still reigns the greatest chaos in its treatment, and so far as I can see there will continue to be great diversity of opinion on the subject until our knowledge of its pathology, and particularly of its etiology, becomes more complete than it is at present.

It is difficult, indeed impossible, to even sketch the various things which may be done for the patient in the time allotted, and it is not likely that it would prove to be profitable. It, therefore, has seemed best to make an effort to group the various plans as follows:

1. Those directed toward the correction of the neurosis, which is believed by many to lie back of and to cause the alteration in the functions of the thyroid gland.

2. Those which are directed toward counteracting the perversion of the thyroid secretion.

There is much collateral evidence in support of the idea that fundamentally this disease is a neurosis, and independently of whether this is true or not a very considerable proportion of the patients must be or are, at least for a time, best treated along these lines.

One of the most important and constant of the symptoms is the increase in tissue waste, a fact which imme-

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diately suggests the advisability of rest and of abundant proper nutrition. The degree of rest required varies in different patients and in the same patient from time to time, and ranges from absolute and prolonged rest in bed to a mere restriction of activities. The rest should be both physical and mental. In many instances this rest, particularly the mental rest, can be best obtained if the patient is in hospital or sanitarium. In other instances, however, the opposite is true, just as in some cases a certain amount of work may be permitted. It is not possible to give more than the most general suggestions on these points, and much must be left to the judgment and good sense of the physician in charge. The better his suggestions are adapted to the individual case and her surroundings, the more satisfactory the results will be.

So, too, in regard to the diet, thought and care are necessary. The circumstances, tastes and digestive powers of each case must be consulted. In some cases forced feeding is required, while in others the usual amounts of food are sufficient.

The influence of climate is often important and many cases are greatly benefited by a change. Just what change should be advised can not be stated, for, while some cases are improved by a trip to the mountains, others receive greater benefit from a trip to seacoast or an ocean voyage. If the cardiac symptoms are marked, high elevations should be avoided; and, if the patient goes to the seashore, surf bathing should be forbidden. And, wherever the patient goes, quiet, rest and good food are absolutely essential.

These general hygienic and dietetic suggestions, suitable under all circumstances and to all cases, may be combined with various other measures, such as baths, massage and electricity.

Baths of various sorts and kinds have been very enthusiastically advocated by those whose interests are centered in hydrotherapeutic methods and institutions, but, when sufficient allowance is made for this enthusiasm, there is not much left to say in their favor.

Various forms of the electric current have been extensively employed; some advocate galvanism, some faradism, some the static current. There is much diversity of opinion as to their value. But it is probable that no one of them has other than a suggestive influence, and it should always be kept in mind that the exophthalmic patients are extremely susceptible to suggestion. This is well illustrated by the statement of Moebius to the effect that anything is of value, providing only that the patient is led to think that it is.

More recently some use has been made of the *x*-ray. Some have reported most favorable results from this method, while others have seen no other effects than a lessening of the activity of the metabolic processes.

Turning now to the question of drugs, one finds an almost unending list which have been employed, and in regard to the value of each one finds wide diversity of opinion. The use of various iron preparations has been advocated and condemned, but the summation of experience is that if there is an anemia, particularly one of the chlorotic type, as there often is, iron is useful, but that it has no direct effect on the fundamental process.

Arsenic is another drug about which much the same may be said as has just been said in regard to iron.

Iodids, the use of which is suggested by the presence of the goiter, have been used by many, and, while their use may be accompanied by a reduction in the size of the goiter, the other and more important symptoms are intensified. This is particularly true in the cases of primary exophthalmic goiter. There are some who have seen patients improve under their use, but in general it may be said that the improvement is in spite of rather than because of. For some reason yet unknown the iodid of potassium has proved to be more harmful than iodin itself. The use of iodothyrin is to be unreservedly condemned.

Because of the prominence of the cardiovascular symptoms, drugs which influence these have been extensively employed, in particular the digitalis. In regard to the value of this, as of its substitutes, strophanthus and convallaria, there is the same diversity of opinion noted in regard to all the agents so far mentioned. Small doses accomplish nothing, while larger doses are prone to excite the signs of digitalis poisoning. Many experiences and careful clinicians, however, employ these drugs in cases where there is extreme tachycardia or any of the usual evidences of cardiac insufficiency, such as cardiac dilatation, passive congestion of the liver or edema of the feet.

It has also been natural to endeavor to lessen the extreme nervous irritability of these patients by the use of various sedatives, the bromids in particular having been extensively employed. The bromids of sodium and potassium are the ones usually given, but the hydrobromate of quinin has also been advocated, even with enthusiasm, by some. Opium or its derivatives has been used for years and, except for the dangerous possibility of establishing a drug habit, seems to me personally to be more valuable than other sedatives.

To these, the drugs most often employed, may be added others, such as quinin, antipyrin, phenacetin, salicylates, veratrum viride, aconite, cannabis indica, strychnia, nitrites, sodium phosphate.

One is forced by such a review as this, and by the diametrically opposed opinions which have been expressed by equally careful observers as to the value of each of the drugs or methods mentioned, that no one of them has any direct effect on the process and that their beneficial influence is determined solely by the skill and intelligence with which their use is adapted to each particular case.

Another group of preparations which have been used and still are to a limited extent, deserve mention more because it shows the evolution of our ideas as to the essential nature of the diseases. This group contains the bodies prepared from various glands having an internal secretion and includes the thyroid, thymus, suprarenals, ovaries and testicles. In regard to all of them one finds favorable reports, but, after reviewing the entire experience, one must conclude that they are all useless, with the exception of the thyroid preparations, which are positively harmful.

Lastly come the preparations which appear to best fit with the current idea that an excessive or perverted activity on the part of the thyroid gland is the essential factor of this disease. This belief, one which I personally share, has led to the manufacture of a number of antitoxic or cytotoxic preparations. While the fundamental idea underlying these is the same, the preparations are of two different sorts: first, those derived from animals which have suffered thyroidectomy, and, second, those derived from animals to which normal or pathologic glands have been administered. In a few instances the serum of patients with myxedema has been employed, but it is obvious that no extensive use of

this is possible. The preparations which have been most extensively used are the milk, either natural or desiccated, from thyroidectomized animals, the antithyroidin of Moebius, the thyroidectin, i. e., the desiccated blood of thyroidectomized sheep, and very recently a serum prepared by Rogers and Beebe by the use of the nucleoproteid and thyroglobulin from normal and pathologic glands.

It is yet too soon to express a definite and final opinion as to the value of these various so-called specific preparations. The reports so far published are to the effect that most of the cases are improved, a small number are cured and an equally small number are unaffected. Were it not for the apparently well-grounded theories which underlie this work, we would, I believe, be justified in saying that these preparations are as futile as the other methods of treatment which have been outlined, and that the cures and improvements are to be referred to the rest, hygiene and passage of time rather than to the material administered. However, no definite judgment on the question can be reached until more cases have been observed, more time has elapsed, and probably until more perfect sera are prepared.

After this discouraging review of the methods of medical treatment, it would seem as if all cases should be treated surgically, and yet I think that many, possibly a majority of the cases, should continue to be handled by medical methods, for one must always remember that the natural evolution of the disease is toward recovery. I have endeavored to formulate some rules which might serve as a guide to the selection of the cases for surgical treatment, but can not, even to my own satisfaction, go further than to say that medical treatment should be employed in every case until it is seen that, in spite of rest, proper nourishment and hygiene and intelligent effort at the correction of individual symptoms, the patient is steadily getting worse. How long the employment of surgical measures should be delayed must be determined in each individual case, but it is far better to operate earlier than is necessary than to delay too long.

If in a given case the condition is not serious, but in spite of the best of help still remains bad enough to interfere with the usefulness of the individual, partial thyroidectomy should be employed.

The same thing must be said of the resection of the thyroid as has been said of the other methods of treatment—that the results are good or bad in direct proportion to the skill and intelligence with which it is advised and carried out.

THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITER.*

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Out of 3,460 operations for goiter performed in Professor Kocher's clinics in Berne up to date, 315 have been done on 254 patients afflicted with exophthalmic goiter, of which I will speak here.

My father, Theodor Kocher, was one of the first to operate on the thyroid gland in this disease, which he always claimed to be caused by hyperactivity of the thyroid. The results of his operations on the gland have been up to date so satisfactory that he has proceeded in very much the same way for the past twenty-five years.

I will say only a few words of other operations. In three excisions of the sympathetic nerve, to which I referred in my paper in 1902, the operations had absolutely no permanent or progressive effect on any symptom of the disease. Another, done two years ago, following an operation on the thyroid gland, merely to influence the persisting exophthalmos, had a directly bad effect, so that plastic operations subsequently had to be done to the more protruding eyeballs. I need, therefore, make no further reference to this method.

Let me now, first of all, speak of the danger of the operation in exophthalmic goiter, which still keeps many a patient and often his physician away from the surgeon. We have had in the last 91 operations on 63 patients not a single death, and, in the whole, we have lost only 9 patients out of 254; that is to say, 3.5 per cent. There is no doubt that this percentage will still be lowered. If we ask why we have had a lower mortality than formerly, the answer is a very definite and short one. It is not only because of our improved technic, but because experience has shown that more prudence and care is necessary for operations in this disease than for the majority of other operations. It is not that in a greater number of cases surgical treatment has been refused, for, on the contrary, we have been able to operate in nearly all, but because we have learned to judge of the gravity of a case and to decide accordingly the extent to which the patient will stand operative measures.

Whereas, previous to my paper in 1902, extensive operations had been done (such as excision of one side and resection of a part of the other side of the gland, excision of one side together with ligation of arteries of the other, and ligation of more than two arteries in one session), in the last 100 cases such operations have merely been done exceptionally, and only when we were sure the patients could stand them. Very often we had to begin with the ligation of a single artery, and even this only after a long preparative treatment of the patient.

Let me tell you in a few words what we consider important for every surgeon to know before he attempts operations of this character. Above all, we have to investigate the strength of the heart. In the majority of cases, and especially if the disease has been of long duration or has presented sudden exacerbations, we find the heart dilated. We are then to decide whether or not we have to deal with a compensatory hypertrophy, the result of increased cardiac activity brought about by the tachycardia. If this is the case, the dilatation will be slight and constant, and, what is more important, blood pressure will be increased. This we find in the majority of cases. A systolic blood pressure, even of 195 mm. mercury (Riva Rocci), does not forbid operation, but we must be sure that the high pressure is proportional to the degree and constancy of tachycardia. If this is not the case, extreme care is necessary. If we find the blood pressure below normal and the disease highly developed, we must study the condition and especially note the action of the heart after exertion or excitement. Under these circumstances we might find a sudden, very marked dilatation of the heart, irregularity of pulse and a blood pressure which can not be measured with our ordinary methods. These patients must be carefully watched and prepared for operation and, what is

* Read in the joint session of the Sections on Practice of Medicine, Surgery and Anatomy, and Pathology and Physiology, of the American Medical Association, at the Fifty-eighth annual session, Atlantic City, June, 1907.

more important, they should never be submitted to an immediate extensive operation.

The second point which we have to consider is the degree of the disease at the moment we are asked to operate, and this particularly concerns the degree of intoxication presented by the patient at that moment. Intoxication is evidenced by special symptoms, such as sleeplessness, extreme nervousness, great fatigue, weakness, diarrhea, vomiting and a high degree of tachycardia, with irregular pulse and a very vascular thyroid. A highly vascular gland, with expansile pulsation—that is to say, with dilatation of the capillaries (what we call struma telangiectodes) is a sign of very severe intoxication. We find these symptoms more pronounced in the early stages, especially when there has been a rapid development of the disease. Such symptoms do not warrant an extensive operation, and the patient consequently should be prepared merely for a slight operation.

Of further importance is the examination of the blood in exophthalmic goiter, for through this we are apt to find an answer as to the gravity of the disease. Up to the present time 58 cases have been carefully examined by Dr. v. Steiger, who has done special work in hematology. In nearly all typical cases of the disease we find an increase in the number of lymphocytes and a decreased number of the polynuclear forms, the total number of leucocytes being normal or rather low. The number of lymphocytes is sometimes absolutely increased, but more often the increase is a relative one. This increase is proportional to the degree of the disease, and if there is no increase of lymphocytes the case is an especially serious one. Only in very early, undeveloped cases and in those of long standing which have improved do we find that lymphocytosis is absent. Some time after operation the numerical proportion of the different forms of leucocytes becomes either normal or nearly so, in accordance with the improvement of the patient. We know very little as yet of the significance of lymphocytosis. That form of lymphocytosis which follows infections must be regarded as a secondary hyperproduction in the lymphoid tissues, damaged by the acute infection. Lymphocytosis, on the contrary, is a primary and specific process and indicates a hyperfunction of lymphoid tissue, probably according to its want, and this can not be merely a local effect, as there is a substitution of the myeloid leucocytes at the same time.

We furthermore know very little of the function of the lymphocytes themselves. Their number is increased in slight or chronic infection, and more especially in intoxication, and we must admit that in exophthalmic goiter an analogous irritation of lymphoid tissue takes place. We know that wherever this irritation takes place lymphoid tissue can form, and it is an interesting fact that in exophthalmic goiter the lymphatic glands in the neighborhood of the thyroid are hypertrophic, and more especially lymphoid tissue and germinal centers are also present in the gland itself, which indicates that the thyroid body is the place of origin of this irritation. We find that this local formation of lymphoid tissue in the thyroid body is present also in early cases, even before there is evidence of lymphocytosis of and diminution in number of polynuclear leucocytes in the peripheral capillaries, which latter is the result of the toxic influence on the bone-marrow. After excision of a part of the gland, we also find the lymphocytes diminished, whereas their number increases after ligation of arteries.

It may be seen by this brief statement what important results the examination of the blood may give as to the gravity of a case. The very fact of substitution of myeloid leucocytes by lymphocytes seems to me of further importance. It might explain why an ordinary, even slight infection or intoxication acts so badly on a patient with exophthalmic goiter, because ordinary leucocytosis can not get so far or substitute lymphocytosis. Therefore, the patient's condition may be very bad with a slight infection, or the symptoms of exophthalmic goiter may increase often to a dangerous extent. We found, for instance, in a patient with this disease who developed tonsillitis, only 7,000 polynuclear leucocytes and 3,400 lymphocytes, though the symptoms of infection were very marked and a very high temperature was present. The same fact of substitution might explain some of the sudden deaths after operation in severe cases, in analogy to the sudden deaths in lymphatic conditions. When the gravity of a case has been thus established, we can determine the time and decide on the method of operating, for sooner or later we will be able to operate without fear.

Now the second and more important question arises: Can we cure the disease by operation? Most surgeons have noticed an immediate increase of the symptoms after operation, which symptoms can even become fatal. I have, in my paper in 1902, claimed that this postoperative aggravation is due mostly to hemorrhage and absorption of toxic blood, especially when gland tissue is resected and injured in any way during the operation. This opinion has since been widely confirmed. By most careful avoidance of any bleeding, by ligation of every small vessel, and by taking the greatest care not to injure the parts of the gland to be left, we can avoid alarming symptoms almost completely. As a matter of fact we see such symptoms at the present day only if, for any reason, the operation had to be done quickly and the gland tissue was injured.

When the immediate effect of the operation is over (and when it has been done under local anesthesia the disturbance lasts but a few hours), the surgeon is surprised at the striking improvement in the patient's condition. The very fact that the symptoms of the disease may disappear so soon after the operation, so that many times the patient is almost normal in a few days, seems to us to be the proof that we have touched the disease in its important place.

I think that it is generally admitted nowadays that the thyroid gland is diseased in every case of exophthalmic goiter, and it is also admitted that it shows functional alteration. It is much to the credit of American physicians that they have demonstrated what are the exact histologic changes in the thyroid gland in this disease. The proliferation of the epithelium, which assumes the cylindrical type, and the liquefaction of colloid are the most striking features and, especially when compared with the hypertrophic glands described in Halsted's classical experiments, these changes seem to furnish proof of a functional disorder. Still it has been difficult for those who have examined large series of cases and also for those who see a great deal of other diseases of the thyroid gland, to accept the above-mentioned changes as being specific for exophthalmic goiter. We find the same enlargment of follicles with formation of papillæ and high cylindrical cells, together with the decrease in thick colloid, in glands of normal size in hypertrophic as well as in nodular goiters, without the slightest symptom of exophthalmic goiter. But we find them in a part of the gland or in a nodule where

vascularization is rather diminished, while the diseased parts in exophthalmic goiter, even if present in areas only, will be found in very vascular parts, as, for instance, in the periphery of the gland or a nodule. We must conclude, therefore, that the histologic changes themselves do not account for the symptoms of the disease, but it is the change of metabolism which shows itself by the increased vascularization of these parts. Chemical experiments, which I can not discuss here, show that material, such as iodin, is taken up eagerly by the thyroid gland in patients with exophthalmic goiter and is not eliminated by the kidneys as it is in normal individuals.

Besides these histologic changes, we must consider, as characteristic for the disease, the formation of lymphoid tissue in the thyroid glands, and in special cases the presence of large cells with specially differentiated protoplasm. The diffuse infiltration with leucocytes and the desquamation of the epithelial cells, which we find very often in the inflamed gland in exophthalmic goiter and which have been described by several authors as being characteristic of the disease are secondary. This may be the result of handling and injuring the gland during operation or the result of treatment with Roentgen rays, electricity, injections, etc. We also find it regularly after ligation of arteries in previous operations.

What are we accomplishing by our operations on the thyroid gland in exophthalmic goiter? Only exceptionally a limited and well circumscribed part of the gland is diseased and can be entirely removed. It happens when the disease develops in a subject with nodular goiter and may also account for the prompter cure of these cases by operation.

Nearly always the changes are diffuse, though in areas, and it is not possible to take away all diseased tissue without depriving the patient of the thyroid function altogether. This is, in my opinion, not permissible. What we can do is to reduce the diseased tissue or its increased vascularization and thereby reduce the assimilation. It has proved that the nearer to the normal we reduce the gland, or its blood supply, the prompter the cure will be. I think it is the best proof against a perverted secretion of the thyroid gland in exophthalmic goiter, that even when we leave behind so-called diseased gland tissue, but under normal blood supply, the improvement after the operation is immediate and goes on to entire cure. We must admit, therefore, that the so-called diseased part of the gland can assimilate normally and, more than that, it can become normal itself or rather adapted to further claims.

The fact that increased vascularization is indispensable for the development of the disease also proves that what reduces vascularization prevents its development. We easily understand, therefore, that in nodular, and especially colloid goiter, with mechanically reduced vascularization owing to the great accumulation of colloid, the disease does not easily develop, whereas it does readily in normal and slightly hypertrophic glands. Based on these facts, the operation has been carried out in 254 cases and the results are as follows:

There is not a single case of ours in which the patient has not been much benefited by the thyroid operation. We have cured by our operation the patients in 83 per cent. of all our cases. There are 73 per cent. of the patients with the so-called primary disease healed; 92 per cent. of the patients having the disease combined with ordinary goiter, and 100 per cent. of the patients with vascular goiters. Some of the observations date back 15 and 17 years since the time of observation, without recurrence of the disease, provided that the operation was carried so far that vascular symptoms of the thyroid disappeared completely. In cases of this type the patients are all completely cured, so that no symptom of exophthalmic goiter remains. But the time required for recovery has varied greatly, it being especially long before the heart and eyes became normal again. I wish especially to say that our chances of cure do not so much depend on the degree and the extent of histologic changes as on the duration and the secondary changes in the case.

We have had cases in which the excised gland showed excessive epithelial proliferation in all parts and in which the patient presented all the symptoms in the highest degree, and yet the cure has been just as complete and rapid as in patients showing much colloid matter and less severe symptoms. The difference between the two lies in the fact that the former, as a rule, not only develop very rapidly but also progress rapidly. Hence an operation must be undertaken early before organic changes take place, and also before the thyroid tissue has undergone induration—that is to say, before the excessive proliferation of cells has mechanically reduced the capillary supply and a part of the functional tissue, and also before infiltration and desquamation have destroyed a part of the functional tissue. These latter changes are the cause of symptoms of hypothyroidism.

Secondary organic changes of this nature were present in 4.8 per cent. of our cases. The patients were all very much benefited by the operation, but some heart trouble, the impossibility of much exertion and more or less exophthalmos remained. These patients might present slight symptoms of hypothyroidism, but I must say that, owing to the great care my father takes in this matter, it has been the exception to see these symptoms appear after operation.

Ten patients (4.4 per cent.) were benefited by thyroid operation, but not as much as could have been expected; some of these had symptoms of other diseases and they seemed to present a special form of the disease. But space is too limited to discuss this question. Eight patients (3 per cent.) are still under observation, the time since the operation being too short to give any definite opinion concerning them. In another group of eight cases (3 per cent.) the patients could be cured by the thyroid operation, but, being so much improved, do not wish it.

This brings us to the question, how operate? The most important condition is *nihil nocere*, and that is why I have spoken, in the first place, of the danger of operation. We have seen that careful preliminary observation of the case makes a carefully conducted operation a possibility for almost every patient. The method has to be chosen for every case. We give the preference to repeated operations with the patient under close observation and with the help of medical treatment. More than two arteries should never be ligated in one session, because of the above-mentioned changes in the gland. To remove more than half of the gland at one sitting is dangerous, and it is difficult to say whether this is ever wanted. We find it rarely necessary to resect a part of the remaining gland after excision of one side.

The question, When are we to operate? depends not alone on the physician, but also quite as much on the patient. Often the surgeon thinks it the doctor's fault

that he is consulted so late, and does not imagine what an unsettled and sick mind the patient has. It is necessary to advise people to see the doctor in the early stages of the disease. Nervousness, irritability, weakness, emaciation, sleeplessness are the early symptoms and are not sufficiently dwelt on. These patients are often regarded as cases of neurasthenia. If such patients were carefully examined by medical men, especially after exertion and before or during menstruation, characteristic, although slight, symptoms could often be made out; such as tachycardia, ocular symptoms, tremor, blood changes, and especially vascular symptoms of the gland.

On these latter symptoms treatment should be decided. Distinct vascular symptoms should at once induce surgical treatment. If they are wanting, the medical treatment, with the patient under close observation, may cure, but if it does not, or if relapses come on, vascular symptoms will develop before long and be at once noticed by the doctor and induce surgical treatment. In such cases ligation of two arteries or excision of half of the gland will cure definitely in a very short time. If the doctor sees the patient only when the disease is at its worst, then we do not advise an immediate operation. Even ligation of one artery may be dangerous then, because of the increase of the discharge of toxic material from the gland and because in these cases the organism has not yet developed its own antitoxic reaction, the lymphocytosis. In these cases medical treatment is needed and cytotoxic serum here seems to act well. If the reaction of the organism is present, operative treatment must take place.

In cases of longer duration, great benefit can be derived by operation, but here one has to be even more careful, as we have to deal with organic changes in the heart and there is the fear of hypothyroidism. I wish to mention one fact, that in all cases of long duration, whether in the so-called primary cases or in the cases combined with ordinary goiter, always the same symptoms are evident—dilatation of the heart, excitable pulse, and exophthalmos. As to the latter symptom, which is mostly caused by the dilatation of blood vessels in the orbit, the fact that the eyeball does not go back, even when it can be pushed back easily, does not in all cases come from development of fat or connective tissue, as is generally admitted, but also from the fact that the muscles of the eyeball have been distended so much and so long that they can not contract well, if at all. It is possible that electric treatment might be of benefit.

We come now to the conclusion that operation on the thyroid gland gives the possibility of an entire cure of the disease. Whether we admit a primary irritation of the sympathetic nerve, and, therefore, an increased metabolism of the gland, or a primary increase of thyroid material and from it an irritation of the sympathetic system, or both, it amounts to the same thing so far as the thyroid operation is concerned. By reducing the hypertrophic thyroid tissue or reducing its blood supply, we reduce the possibility of too extensive reaction to the primary cause and also enable the gland to adapt itself to counteract new outbreaks of primary causes which a nervous subject can easily show.

DISCUSSION

ON PAPERS OF DRS. BEEBE,* MAC CALLUM,* BARKER, PREBLE AND KOCHER IN THE SYMPOSIUM ON GOITER.

DR. W. S. HALSTED, Baltimore, expressed his belief in the efficacy of the serum discovered by Drs. Beebe and Rogers in some cases. He saw a series of cases in which the exhibition of the serum had been followed by relief, almost complete, of the symptoms of exophthalmic goiter. The result of the surgical treatment of exophthalmic goiter in the Johns Hopkins Clinic has been surprisingly successful. Of some ninety cases of this affection operated on by Dr. Halsted during the past fifteen years only two patients have died, and both of these in the current year. Of the two fatal cases, one weighed only 60 lbs. at the time of operation, and was losing at the rate of 3 lbs. a week while under observation. The other patient died very suddenly four days after operation, during apparent convalescence.

Speaking of the danger of surgical tetany, which, until the epoch-making discovery of Gley in 1891, was incomprehensible, Dr. Halsted said that it seems hardly credible that the loss of bodies so tiny as the parathyroids should be followed by results so disastrous. With our knowledge of the function of the parathyroid glandules comes not only the recognition of the necessity for their preservation, but more frequent occasion for operations which imperil the vitality of these bodies. Seven cases of operative tetany within the past two years in the practice of a certain great surgeon probably exceed in number all that have occurred in his practice during the quarter century preceding. The ligation of two thyroid arteries has in several instances been followed by tetany. From simultaneous ligation of the four thyroid arteries in exophthalmic goiter the danger of tetany is so great as to contraindicate this procedure. In performing unilateral thyroid lobectomy, Dr. Halsted maintained that one should not sacrifice either of the parathyroid glandules of the operated side, for tetany may follow the excision of one lobe, and indication for the removal of the other lobe may subsequently arise. The cases of tetany occurring in the practice of experienced operators are, he thought, less often due to the actual removal of the parathyroids than to interference with their circulation. For the preservation of these little glands knowledge of their blood supply as well as of their location is essential. Their situation is, in general, along the posterior border of the thyroid lobe, commonly in the course of an anastomotic channel connecting the superior and inferior arteries. They may be found at any point from the top to the bottom of the thyroid gland, along its posterior border and posterointernal surface, and at least one is quite constantly found near the entrance into the thyroid gland of one of the branches of the inferior thyroid artery.

R. M. Evans has demonstrated that each parathyroid glandule has its own little artery, given off usually from a branch of the inferior thyroid or from the channel connecting the superior and inferior thyroid arteries; and directly or indirectly always from the last named arteries. Somewhere in the middle two-fifths of the posterior border of the thyroid gland these parathyroid glandules are ordinarily found, the superior one being rarely as high as the superior pole, and the inferior one frequently below the inferior pole of the thyroid gland.

Not infrequently it is very difficult, indeed, to avoid cutting off the blood supply of these glandules in the course of operation, for the parathyroid artery may be given off from its parent stem just as the latter is entering the thyroid gland. In such cases there is not room for the point of even the finest artery forceps or the parent stem distal to the point of origin, of the parathyroid artery. Twice Dr. Halsted found it quite impossible, for the reason just given, to save a parathyroid glandule; and on several occasions, in the course of operation he has transplanted into the thyroid gland a parathyroid body whose circulation was threatened or cut off. In dogs he has many times transplanted parthyroid glandules, into thyroid gland and spleen, occasionally as many as seven or eight of these little epithelial bodies into one spleen. After eight months of experimentation he has been unable to obtain functional proof of the success of a transplantation, although six weeks after the transplantation into the thyroid gland there was anatomic evidence of the success of the experiment. Hence he feels that at present one can not rely on transplantation of the parathyroid glandules. The main reliance in case of

* The papers of Drs. Beebe and MacCallum were published October 5.

tetany is the injection, hypodermically, of the proteids of these bodies as prepared by Dr. S. P. Beebe.

Dr. Halsted stated that the procedure in the course of thyroid lobectomy which seems to him best to guarantee the safety of the parathyroid glands, is ligation of the branches of the thyroid arteries as far peripherally as possible, beyond the point of origin of the parathyroid arteries. The slicing of the thyroid lobe distal to the parathyroid bearing area, he said, is not to be countenanced in severe cases. This procedure, which may be resorted to in many cases of colloid and nonhypertrophic goiter, is in the exophthalmic form reserved by Dr. Halsted for operations on the second lobe, and for the special occasions when the blood supply of the parathyroid is such that ligation of the little radicle beyond the origin of the parathyroid artery, is impracticable.

DR. FRANK BILLINGS, Chicago, said that one must bear in mind that while there are patients who suffer with the typical symptoms, there are others who may be nervous, may have tachycardia, tremor, flashes of heat and cold, myasthenia with early exhaustion on either mental or physical effort who would ordinarily be classed as neurasthenics, but with the appearance of slight goiter could be classed under exophthalmic goiter. It is sometimes difficult to see where neurasthenia ends and exophthalmic goiter begins. It is, therefore, important to have the patient under observation for a considerable period of time in those cases when the diagnosis can not be readily made. There are two classes of patients: One the so-called secondary, where simple struma has existed for an indefinite period, sometimes for years, and where for some cause there may be developed exophthalmic goiter. In the second class there has been no pre-existing knowledge of goiter and the symptoms of exophthalmic goiter develop suddenly. The morbid anatomy of the classic goiter of exophthalmic goiter is said to be that of the hypertrophic thyroid gland. Associated with this there is an increase in the secretion of the gland and hyperthyroidea results. It is known that in certain localities simple struma exist in larger numbers than in other places, and certain localities also give a larger number of exophthalmic goiters. Dr. Billings stated that there are three or four counties just north of the center in Illinois, from which a larger unmber of cases of simple goiter and exophthalmic goiter come than from other regions in the state. In one small village in Michigan eight cases of simple goiter occurred and two developed exophthalmic goiter. Dr. Billings urged that physicians individualize in the treatment. Last year he reported sixty-five cases of exophthalmic goiter before the Chicago Medical Society. Of this number three patients had been operated on, with one death during the operation. The other patients had been treated medically and three terminated fatally. The three fatal cases were acute manifestations of the disease and ran a rapid and very acute course. Of the remaining patients, all improved very materially on a rest treatment. No specific medication was given, but the rest treatment was given with an attempt to individualize as to the time to produce results. Ordinarily, he said, the rest treatment as prescribed by most physicians is not thoroughly given. The patient must have physical as well as mental rest. In one instance it may be the continuous recumbent posture; in another the recumbent posture must be changed for the sitting posture or even moderate walks taken to keep the patient in the proper mental state. In all cases the environment must be restful. The food should be nourishing and should be pushed to the full digestive and assimilative power of the individual. The icebag used intermittently over the precordia and over the goiter, galvanism through the goiter and in the direction of the pneumogastric nerve, cold salt glows and massage are important incidents in the management. Medication is of less importance, but for certain individuals small doses of opium are helpful. The hydrobromate of quinin, 5 grains, three or four times a day, is often helpful because of its effect on the vasomotor apparatus. If a rest treatment thoroughly carried out results in a decided improvement, one would be justified in continuing it. If it is not helpful to the individual or if the individual's financial conditions or relation to the family are such that it is impossible to take a rest treatment, then, Dr. Billings said, surgery is indicated. Although less objectionable than formerly, if a member of his family suffered from the disease, Dr. Billings would prefer at first to try the rest treatment rather than to at once submit to surgery. In his experience with the few patients he has seen operated on, entire recovery has not occurred, as it does not occur in those managed medically. Such patients continue to show moderate cardiovascular disturbances and more or less tremor and other evidences of neurosis.

DR. WILLIAM J. MAYO, Rochester, Minn., said that three types of these cases are seen clinically. First, the vascular type; second, the type that is due to a hypertrophy of the thyroid tissue, and third, those cases of hyperthyroidism developing in patients with pre-existing goiters. There is a fourth or pseudo-type in which there is not a true exophthalmic goiter or hyperthyroidism, but where a tumor, such as an adenoma, develops in the gland inside of the capsule and produces pressure on the gland. In other words, the tension within the capsule of the gland causes a greater amount of secretion to be absorbed. Such cases, he said, do not require removal of the thyroid, but simply removal of the tumor. Dr. Mayo considered one point brought out by Drs. Halsted and MacCallum exceedingly important in this connection, and that is, that there is practically no difference between the glandular overwork that comes from experimental removal of part of the normal thyroid gland and cases of hyperthyroidism. In other words, that there is practically no difference between a gland which has been hypertrophied as the result of necessity produced by operative removal experimentally, and those cases in which this takes place not as a result of such a necessity. These cases, then, can be shown both clinically and microscopically so plainly that there can be no question regarding their existence. Another point brought out by Dr. Barker he thought also important, and that is that some of these patients do not, apparently, have goiter. That was his opinion for a while, but he now finds that in every case, whether the goiter is apparent or not, there is enlargement of the thyroid, and that those cases with pre-existing goiter, where proper areas are cut and examined, the typical changes, macroscopic and microscopic, can be shown. As to the relief of these patients, Dr. Mayo said they can be cured by operation. A failure to cure, as a rule, is due to failure to remove enough of the gland. In regard to the question of tetany, Dr. C. H. Mayo found in a large number of cases but one case of tetany and that was exceedingly mild and soon disappeared. Dr. Mayo said that if the posterior capsule of the thyroid is carefully preserved, and the tumor removed from above, it is impossible to cut into the parathyroid glands.

Finally, in regard to the question of operative mortality, Dr. C. H. Mayo reported 176 cases of hyperthyroidism operated on with nine deaths. There were four deaths in the first sixteen cases operated on; three in the next thirty cases, and three in the remaining cases. There was but one death in the last 75 operations. The earlier operations were done with a considerable loss of blood. They were cases in which the medical treatment had failed. They were operated on at a bad time, and the result was a high mortality. With careful preparation this is largely disappearing, and Dr. Mayo believes that one can now look on hyperthyroidism as a surgically curable disease; not in all cases, but in those turned over to the surgeon by the medical man not too late when they feel that these cases have been subjected for a reasonable length of time to medical treatment without relief. Such cases can be looked on as being susceptible to a cure by surgical means.

X-Rays Plus Static Electricity in Treatment of Lupus.—F. Winkler of Vienna reports excellent results from the use of soft Roentgen tubes in treatment of lupus until the lupous patches become necrotic, after which he substitutes static electricity, under which the lesion rapidly heals. He cites in the *Monatshefte f. prakt. Derm.* for September 1 a case in which different technics were used on different patches on the same individual. The patch treated by the Roentgen ray plus static electricity not only healed over more promptly than the other patches, but has been free from recurrence since, while the other patches have shown a tendency to recurrence.

OPSONINS AND THE PRACTICAL RESULTS OF THERAPEUTIC INOCULATION WITH BACTERIAL VACCINES.*

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No subject of recent years has been before the medical world more prominently than the opsonic theory and inoculation with bacterial vaccines, and we must earnestly consider whether or not such an interest is justified. To reach a right conclusion we must view the whole subject from at least two standpoints: the one is that of the opsonic theory and the other that of the therapeutic inoculation with bacterial vaccines. Let us first review very briefly the theory and then devote most of our attention to the results achieved by inoculation with vaccines.

Opsonins are substances not yet isolated, but known to exist in the blood, whose function it is to unite with bacteria and prepare them for the leucocytes to attack and destroy. Without such preparation the fastidious leucocytes refuse to ingest bacteria, and so this defensive power of the organism is in abeyance. One of Wright's discoveries was this fact, and a second was a technic by which we are enabled to measure the quantity of opsonins in a given blood. The result of such measurement is expressed as the opsonic index. If, therefore, we say that a patient, the subject of tuberculous glands, has an opsonic index of 0.5 to the tubercle bacillus, we simply mean that his blood contains but one-half the normal quantity of those opsonins which are essential to combating the infection of the tubercle bacillus.

Such an observation is of great scientific interest, but as practical physicians we want to know its application to the treatment and diagnosis of disease. The question, therefore, is, given a low opsonic index in the course of a chronic bacterial infection, how can we raise that index and relieve or cure our patient? Wright provided the solution of this problem and gave us bacterial vaccines.

By a bacterial vaccine is meant "bacteria or their products." In actual practice we use bacteria grown in culture-tubes and then devitalized. The principle involved in therapeutic inoculation is that a vaccine, consisting of devitalized bacteria of the same strain as that responsible for the patient's infection, should be administered by subcutaneous injection in correct doses at appropriate times. It is in this connection that the measurement of the opsonic power of the blood aids us, and, without elaborating the argument, permit me to state as my belief that the study of the opsonic power of a patient's blood does enable us to judge the proper dose of a vaccine and the appropriate time for inoculation and reinoculation.

The principle of bacterial vaccination may be brought home to our minds by an example or two. If we have to treat a patient with boils due to infection by the *Staphylococcus pyogenes*, we will grow the staphylococcus, kill it and inoculate our patient with a proper dose of this dead culture. If our patient has tuberculous glands, we will inoculate him with new tuberculin (Bacilli emulsion), which consists of devitalized tubercle bacilli. The principle holds similarly for all bacteria that we can grow.

With this very brief summary of the basic principles, I propose to deal with a few of the results already achieved with these newly forged instruments of therapy. But first let me refer to a practical, though tentative, classification of bacterial disease that four years' investigation of the opsonic index in many hundreds of cases has elicited.

CLASSIFICATION.

Class 1.—This comprises mostly chronic infections in which it has been determined that a low opsonic index is persistent. The lowered opsonic index is thought to be due to the absence of "autoinoculation" (Fig. 1). By autoinoculation is meant the escape of bacteria or their products from the focus of disease into adjacent lymph or blood streams. The result of such an escape is to increase the opsonins and other bacteriotropic substances in the blood by stimulation of the machinery of immunization and often to cure or relieve the infective process. The absence, therefore, of autoinoculation determines the persistence of the infection and indicates the necessity of interference with bacterial vaccines by means of inoculation. In this great class where autoinoculation is slight or absent there are included many tuberculous affections, such as tuberculous disease of glands, bones and early, or moderately early, pulmonary tuberculosis. We find here also boils, acne, sycosis, felons and many cases of sepsis and persistent sinuses, etc.

Class 2.—In this class are those cases in which autoinoculation is the characteristic feature. The more severe cases of pulmonary tuberculosis may be taken as the type. The outstanding feature of these cases is the fluctuation of the opsonic power of the blood from low to high and high to low.

Class 3.—This class comprises the pure septicemias. It is probable (though not yet proved) that certain of these have a generally lowered opsonic power for reasons that need not be discussed. Here are included ulcerative endocarditis, puerperal septicemia, etc.

It is in the first great class, however, where the infection is localized and where in consequence autoinoculation is withheld that inoculation with bacterial vaccines has been most successful. I propose to summarize briefly the results that have been obtained, but especially to refer to cases that have come within my own experience; let me, however, first present the immunizator's method of approach by citing a particular case.

History.—The patient was a young man, aged 20, who seven weeks previously had had an empyema evacuated by resection of a rib. The daily discharge had slowly lessened to about half an ounce of pus, which gave a pure culture of the pneumococcus of Fränkel. With this bacterium as the basis of my further investigation, I determined his opsonic index and found it normal. Nevertheless, I thought that I might expedite matters if I raised this index and so I prepared him a vaccine by growing the pneumococcus in culture tubes, collecting the growth in salt solution and killing it at 60 C. (140 F.). Of this vaccine, I inoculated 100 millions of pneumococci with the result that his opsonic index rose quickly to 2.5. Further inoculations raised his index when it fell and by this means he was made to lead a life of increased resistance to the pneumococcus and was thus enabled to overcome his infection (Fig. 2). The clinical result was striking. In less than two weeks the discharge entirely ceased and a sinus, which though narrow had been six inches long, completely closed. The boy returned to his work and had no further trouble.

I mention this case in illustration of the principles of the method, and as a rule, therefore, we must determine the particular micro-organism responsible, es-

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

* From the Department of Immunization and Medical Research of the Toronto General Hospital.

timate the resistance of the patient to it, prepare a vaccine from it and inoculate in proper doses and at appropriate times as indicated by a study of the variation of his opsonic power. Time will not permit me to enter into this aspect of the subject.

Let us now consider certain groups of infections, and, since the basis of our method is bacteriologic, perhaps it would be most direct if we viewed the subject from that standpoint. I will first discuss infections due to the *Staphylococcus pyogenes*. They are numerous and common. Some are boils, carbuncles, acne, sycosis, felons, styes and septic wounds.

The tracing shown in Figure 3 has reference to a patient who had a large and very painful furuncle on the buttock. His opsonic index to the *Staphylococcus pyogenes aureus* before inoculation was 0.46. I then gave him 300 millions of staphylococci. His index rose to 1.5, as you see, and remained well above normal for some days. The clinical alteration in his symptoms was marked, and in 24 hours all pain and tenderness had left him. Further progress was uneventful.

I have treated eleven patients with boils—most of the cases of a very chronic or severe nature. Of those nine did well—that is to say, within forty-eight hours in most cases the pain had disappeared and also almost all tenderness. As a rule these cases proceeded to complete relief without incident. Unfortunately, immunity

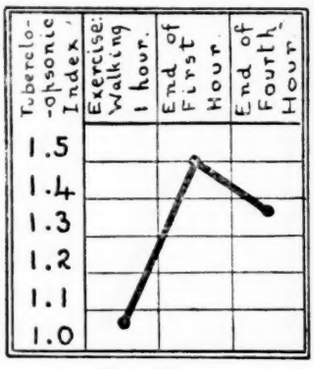

Figure 1.

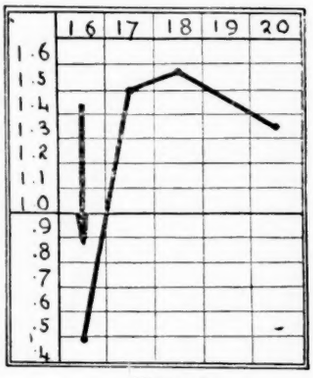

Figure 3.

Fig. 1.—Chart illustrating "auto-inoculation" in a case of moderately severe pulmonary tuberculosis as a result of an hour's walk. The tracing shows the variation of the tuberculo-opsonic index.

Fig. 3.—Chart illustrating the rise of the staphylococco-opsonic index as a result of one inoculation (shown by the arrow) of 300 million staphylococci in a case of furunculosis. Recovery.

from relapse is not assured. Some remain well for long periods, while others have a return after varying intervals. This much can be said, however, that relapses are usually of a less severe nature and, furthermore, can be easily controlled by inoculation if the treatment of the primary lesion or lesions was successful. The two patients of these eleven that were not cured improved considerably, but showed a persistent tendency to relapse. On the whole, however, I feel confident that the vast majority of cases of acute or chronic furunculosis can be completely and rapidly controlled by inoculation with a staphylococcus vaccine.

In Boston I treated a patient with severe carbuncle by inoculation with a staphylococcus vaccine with striking effect. The patient was a laborer of 45 who had a carbuncle on his back as large as a baby's fist. Inoculation with 300,000,000 staphylococci removed all pain and tenderness in forty-eight hours, the central slough came away in eight days and almost all the inflammatory mass was dissipated a week later.

Altogether I have succeeded in curing or greatly benefiting the patients in five cases of acne vulgaris; still the results are considerably less striking than those obtained with furunculosis. There is a number of cases in which we completely fail—why, I do not know.

Sycosis barbæ is usually easily cured by inoculation with a staphylococcus vaccine. I have under treatment a patient with a very severe case of four years' standing. He is now almost well. Wright has reported many successful cases.

If my time was less limited I would give in detail a case of severe septic hand with scattered furuncles and also a case of orbital infection due to staphylococcus. In both the patients responded rapidly and satisfactorily to inoculation with staphylococcus vaccine.

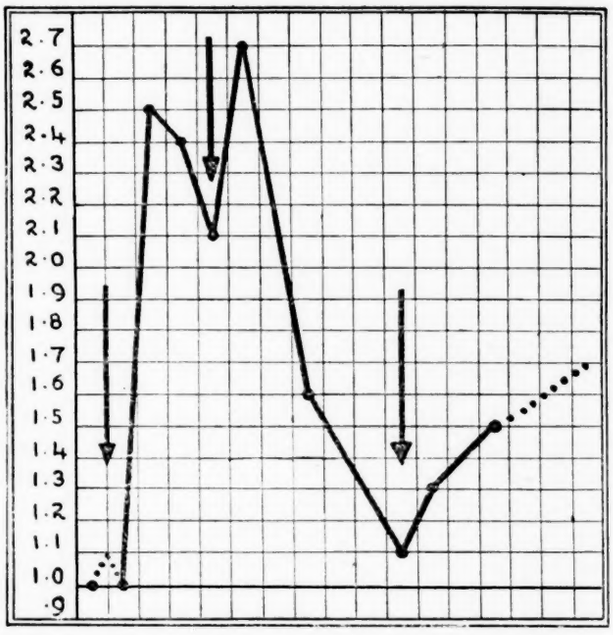

Fig. 2.—Chart referring to a case of chronic empyema sinus due to the pneumococcus of Fränkel which recovered in two weeks as a result of inoculations with 50 to 100 millions of pneumococci. The tracing shows the variation of the pneumococco-opsonic index. The arrows refer to inoculations with the homologous vaccine.

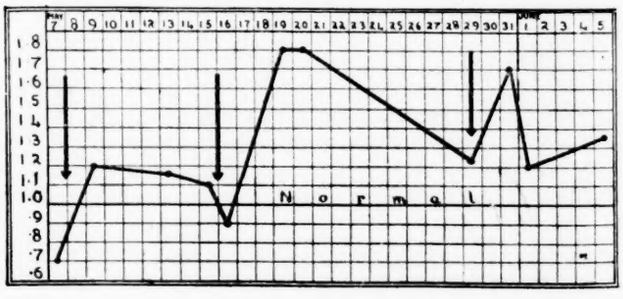

Fig. 4.—Chart referring to a case of tuberculous cystitis showing the variation of the tuberculo-opsonic index as a result of inoculations with tuberculin. The arrows refer to inoculations of 1/750 m. g. of tuberculin. Recovery.

Interesting and important as the results have been with such septic processes as I have mentioned, they hold our attention much less than those which have been obtained by inoculation with new tuberculin in many manifestations of tuberculosis. I shall now refer to several cases.

The first and one of the most striking that I know of was a case of tuberculous iritis. The patient was a boy of 12, who was sent to me by Mr. Lang of Moorfield's Eye Hospital in London. Tubercles were plainly

evident on both irises and of such a severe nature on one that excision of the eye was contemplated. In addition a keratitis punctata obscured his vision. His opsonic index was 0.85 before inoculation. I then inoculated him with 1/750 milligram of new tuberculin (bacilli emulsion), and subsequent estimations demonstrated that this inoculation had increased his index to 1.4 and higher. The inoculations were continued for about six months, when I left him in charge of Dr. Clive Reviere for further treatment. At the end of the six months all the tuberculous masses were much reduced in size and one had practically disappeared. The keratitis had almost completely cleared up. This case, in which one could actually see the tuberculous masses melt away under specific treatment, seems to me to be evidence of the benefit resulting from the use of tuberculin in localized tuberculosis.

I show also the chart (Fig. 4) of a young man aged 22, the subject of a tuberculous cystitis. Tubercle bacilli were easily found in his urine and cystoscopic examination revealed a tuberculous ulcer on the trigone of the bladder. He had frequency of micturition and continued perineal pain. There was little clinical evidence of improvement for three or four months, during which time his opsonic power was maintained at a comparatively high level by repeated inoculations with tuberculin. Then within a week or two the frequency and pain left him and he soon returned to a normal healthy condition. The tubercle bacilli also disappeared from his urine. Nine months later a condition of excellent health obtained and he expressed himself as quite well.

I have treated only two patients with tuberculous glands and both of these did remarkably well. Indeed, it would seem that treatment of this condition by tuberculin constitutes a real triumph for inoculation. Sir Almroth Wright has treated many patients, and when I last saw him he had yet to meet with a failure. Time will not permit me to detail these cases.

I have successfully treated one patient with lupus. Lupus, however, has proved refractory to tuberculin and on the whole we fail in this condition as often as we succeed. On the contrary, tuberculous dermatitis usually responds most satisfactorily to inoculation. I have seen the patients in several cases that might reasonably have been termed desperate respond in a truly wonderful fashion to inoculation with tuberculin. I know also of cases of tuberculous kidney, of tuberculous epididymitis and orchitis, of tuberculous disease of bones and joints and of tuberculous peritonitis in which, to all intents and purposes, the patients have been cured by inoculation with tuberculin, but I can not stop to consider these cases.

The subject of pulmonary tuberculosis would be in itself a more than sufficient theme for an address, but time will only permit me to summarize. I have treated the patients in some fourteen such cases with tuberculin. Less than half were moderately early, the rest were severe. I can only state my belief on this matter, and it is that unless the case be early or moderately early inoculation with tuberculin will be of little or no benefit. As concerns the early cases, however, I hold a contrary opinion, and my belief is that tuberculin is a powerful expedient for good if rightly used. It would be absurd for me to base this opinion on the few cases that I have treated, but Lawson and Stuart, Harris and others have reported a successful issue in a number of cases. Of especial importance, however, are the results of Trudeau and his co-workers at Saranac Lake. After an experience extending over at least twelve years he is more confirmed than ever in his belief that tuberculin is a valuable remedial agent at least in the early or moderately early cases of pulmonary tuberculosis. Möller, at the Belzig Sanatorium in Germany, is also an enthusiastic advocate of tuberculin in pulmonary tuberculosis.

The streptococcus in one or another of its strains is responsible for many chronic or subacute infections. I have a case of chronic sinus, following on a laparatomy, in which the patient is doing well under streptococcus vaccine. I also had a case of chronic pyemia in which the condition subsided when the patient was inoculated

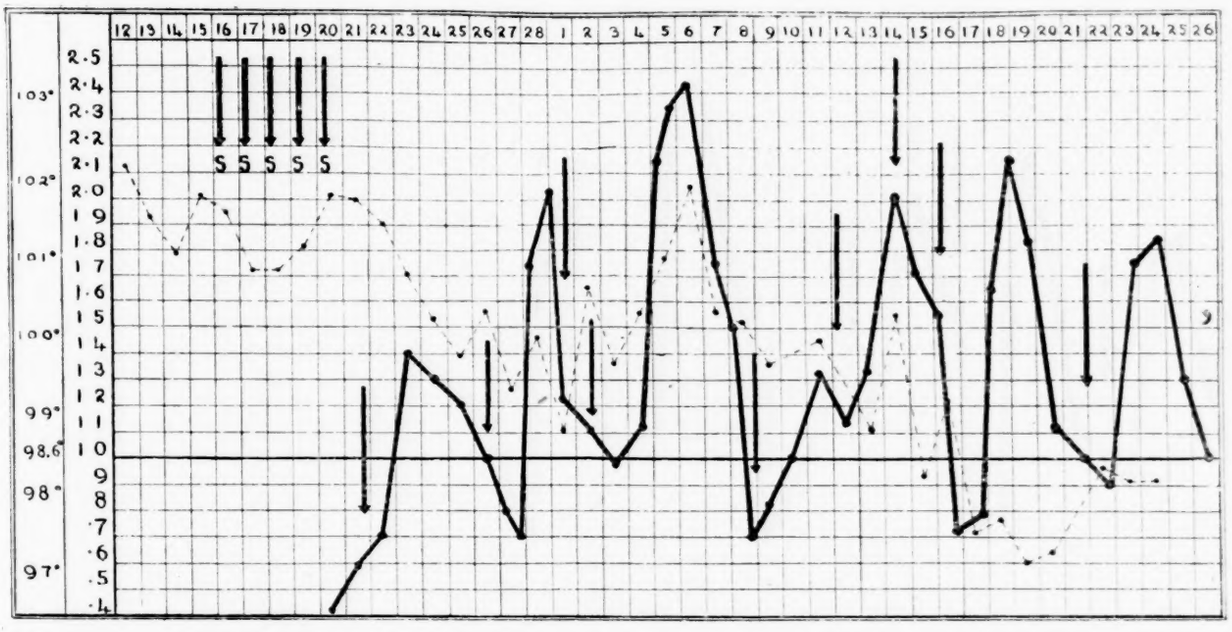

Fig. 5.—Chart (in part) of a case of malignant endocarditis due to streptococcus. The broken line refers to the temperature. The continuous line refers to the streptococco opsonic index. "S" refers to an inoculation with an anti-streptococcus serum. The arrows refer to inoculations with an homologous streptococcus vaccine. Recovery. (Curve by Captain S. M. Douglas.)

with streptococcus vaccine made from her own micro-organisms. Patients with chronic osteomyelitis and subacute puerperal infections also have been successfully vaccinated. Gonorrheal arthritis in quite a number of instances has responded to a gonococcus vaccine.

Patients with pneumococcus cystitis, empyemata sinuses, etc., have been successfully treated. Cases of cystitis, sinuses, etc., due to bacillus coli have responded to a colon vaccine.

Many other affections due to a number of other micro-organisms have been treated with success, but I can not stop to consider them. I shall also have to pass over that whole second class of infections to which I referred, where auto-inoculation is the characteristic, and consider for a moment a representative case of the third great class in which are included the septicemias, viz., a case of ulcerative endocarditis.

History.—The patient was a girl under the care of Sir James Barr in Liverpool. You will observe from the chart (Fig. 5) that she had considerable pyrexia extending over five weeks, before inoculation was undertaken with a vaccine prepared from a streptococcus obtained from her blood. She had had 16 injections of antistreptococcus serum with no good effect. Without going into details it is interesting to note that with the general rise of opsonic power following on inoculations with the streptococcus vaccine there occured a general lowering of her temperature until normal was reached. The clinical result was very happy, for the patient made an almost uninterrupted recovery.

Before concluding this very cursory consideration of a large subject I wish to express certain opinions concerning it—opinions founded on over two years of practical experience in the treatment of a considerable number of affections due to a variety of micro-organisms. I may state that I have endeavored to analyze all my results coldly and critically, with a due allowance for coincidence and the intervention of other, though unknown, agencies. Nevertheless I find my belief firmly established that proper inoculation with appropriate bacterial vaccines is a powerful expedient for the cure or control of many diseases due to micro-organisms. To my own mind the evidence in favor of this belief is almost overwhelming. Concerning the relation of the opsonic theory to inoculation, however, there is considerable difference of opinion. I can not discuss this question now, but my opinion is that though estimation of the opsonic index is often unnecessary, still such investigation has been and still is of great service in enabling us to determine the dosage of a particular vaccine and the appropriate time for inoculation and re-inoculation when we are in doubt. That the method of estimating the opsonic index is mathematically accurate few would have the temerity to claim, but that it is sufficiently so to serve as a useful guide in the practical application of vaccine therapy to the treatment of disease few *therapeutists* who have used the methods over a sufficient length of time to justify an opinion will deny. As a practical physician, however, I am concerned with the cure or control of bacterial disease, and I am chiefly interested in opsonic methods of investigation because I believe that they do assist me in obtaining a successful issue in certain difficult cases where in default of these methods I could use bacterial vaccines neither safely nor intelligently.

DISCUSSION.

DR. JOHN C. HOLLISTER, Chicago, speaking of the irregularity of the normal opsonic index, gave the results of some investigations he had made during the past eight months. The blood from eight normal individuals was taken, at irregular intervals, some times every day, or every other day, with lapses of one, two or three weeks. The results were as follows: Individual 1.—The tuberculo-opsonic index was taken 71 times. Without exception the average of any three consecutive indices lay between 0.9 and 1.1. Individual 2.—The tuberculo-opsonic index was taken 95 times. With one exception the average in any three consecutive indices lay between 0.9 and 1.1. The one exception was 0.8. Individual 3.—The tuberculo-opsonic index was taken 82 times. Without exception the average of any three consecutive indices lay between 0.9 and 1.1. Individual 4.—The tuberculo-opsonic index was taken 51 times. Without exception the average in any three consecutive indices lay between 0.9 and 1.1. Individual 5.—The tuberculo-opsonic index was taken 50 times. Without exception the average of any three consecutive indices lay between 0.9 and 1.1. The average of the averages in these five individuals, covering 71, 95, 82, 51 and 50 examinations, respectively, was 1. Again, the blood from 100 normal individuals was examined and the indices ran, with six exceptions, between 0.8 and 1.2. In two of these exceptions there was found to be a distinct family history of tuberculosis, and also clinical "suspicions" of lowered vitality. Dr. Hollister concluded that if the technic is carried out according to Wright's method, and by capable investigators, or if the technic is carried out by two or more capable persons, the same results will obtain in at least 95 per cent. of cases. Finally, these results will bring the normal opsonic index in tuberculosis between 0.8 and 1.2. If it is found that the opsonic index in three consecutive examinations is below 0.8 or above 1.2, that person's serum is abnormal.

DR. WILLARD H. HUTCHINGS, Detroit, agreed with Dr. Ross that the question seems to divide itself into two parts: First, the therapeutic value of bacterial vaccines, and, second, the question of the relative value of the opsonic index as a method of controlling inoculation. During the past year he has employed bacterial vaccines in a considerable number of cases, controlling their administration by careful estimation of the opsonic index as described by Wright. In his opinion the therapeutic value of bacterial vaccines has been demonstrated conclusively, and the great question at present is that of dosage, the size and frequency of administration of which seems to vary greatly with different individuals. Concerning the value of the opsonic index as a method of controlling this dosage, he is at present undecided. In some cases he has found it of the utmost value and in others it has not served as an accurate guide. However, as Dr. Ross stated, it is the best thing we have at present and while it must be modified before coming into general use, Dr. Hutchings does not believe that we are justified, at present, in basing the treatment of cases by this method on clinical symptoms. This is particularly true of tuberculosis, where he has found the identical dose produce, at one time, a prompt rise of the patient's resistance, and at another a prolonged negative phase. He has found the negative phase extremely variable, so much so that had he inoculated at regular intervals he would have inoculated during a negative phase. Dr. Hutchings believes that 1/1000 mg. T. R. is too large a dose to begin with, particularly in children, for while it causes a decided rise in the index, later the opsonic producing power seems to be exhausted, and following repeated doses there is no improvement. He begins with 1/4000 mg. or 1/3000 mg., and rarely goes above 1/2000 mg. These doses will practically give rise in the index and the same clinical improvement. The question of the practical value of the bacterial vaccines seems to be clearly proved. In a large majority of the cases Dr. Hutchings found that the autogenous vaccines do better in the treatment of surgical conditions than anything we have had before. But one must not use bacterial vaccines to the exclusion of other methods of treatment. He recalled one case of tubercular tenosynovitis of both wrists which was treated for two months by inoculations of T. R., controlled by the opsonic index, with but little improvement. He then tried Bier's hyperemia with this, and the improvement was rapid and marked.

DR. GEORGE W. ROSS, Toronto, Canada, said that he fears greatly that the opsonic theory and vaccine therapy will suf-

fer more from over-exploitation than from conservatism in their application to the treatment of disease. What is most desired, he said, is conservatism, and particularly the use of Sir Almoth Wright's methods by capable men, properly trained for the work. Splendid results in many cases not amenable to the usual methods certainly will be obtained if the treatment by vaccination is thoroughly done. He said that he looks forward to the time when training in this therapy will be provided by medical schools.

VARIABILITY AND UNRELIABILITY IN THE DETERMINATION OF THE OPSONIC INDEX.*

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PHILADELPHIA.

Huxley has said, "The man of science has learned to believe in justification, not by faith, but by verification." With this in mind, throughout the past nine months, I have been engaged in a study of the practical utility of the opsonic index as a factor in the diagnosis, prognosis and therapeusis of disease.

Lest my attitude on this question be misinterpreted, I desire primarily to state that I have no reason to doubt, and, on the contrary, entertain implicit faith in the theory of opsonins; but as to the practicability of the index in medicine, my experiments have occasioned the gravest skepticism, if not absolute pessimism, relative to its utility for the profession at large.

Slow as the perfection of the delicate technic for the determination of the phagocytic power of the blood necessarily was, it is rather surprising to note that approximately but one year has elapsed since the opsonic wave cast its waters on American soil. Although tardy in initiation, the aggressiveness of its influence throughout the states is unprecedented in the history of research and discovery. Indeed so widely disseminated at the present time is this over-valuation of an impractical, yet attractive and ingenious hypothesis, that many in the profession are expecting veritable miracles in the treatment of disease.

Personally it is of little import what may be the relationship of opsonins to antitoxins, coagulins, precipitins and agglutinins, or possibly to amboceptors, complement, etc., but thus far my observation and experience have dictated the belief that Wright's methods have occasioned an unsuccessful attempt, figuratively speaking, to enthrone on a practical basis Ehrlich's side-chain hypothesis. Until the recent session of the American Congress of Physicians and Surgeons, held in Washington, diffidence alone prevented any public utterance of opinion, inasmuch as barely nine months' experience with a problem of experimental medicine, to which Wright and his associates, Leishman and Douglas, have devoted five years for its perfection, did not invite negations prematurely bold. The enthusiastic advocates of the utility of the opsonic index may claim that the causes of failure in the hands of those who have found it impossible to obtain consistent results are breaches in technic and lack of experience, and that such individuals should, after mastering the technic from one of Wright's circle of co-workers, experiment (I beg to ask, for four or five years) before indulging in criticism. To such a statement I can only reply that any technic so intricate as to be impossible of satisfactory solution after four to six weeks in laboratory association with a pupil of its originator, must be relegated to a field of usefulness so limited for the general profession as to render it well-nigh valueless.

It is not my intention to detail the present perfected technical methods for the determination of the opsonic index. Suffice it to say that they are two: The phagocytic index of Wright and the percentage index of phagocyting leucocytes of Simon, and to the latter I extend unqualified preference because of its greater simplicity and comparative ease of determination and because it has always served as a valuable check on the former, confirmation of which is apparent on inspection of Chart 3. One point, however, should be emphasized, namely, the impossibility of gathering from the extant opsonic literature a perfectly satisfactory working technic, it being necessary, although theoretically familiar with the principles, to see at least one demonstration in the hands of an associate of Wright or one who has directly inspected his methods. Even then the difficulties, some of which it is my purpose to enumerate, are so considerable as to render its utility, from a medical standpoint, practically *nil*.

EFFECT OF STRENGTH OF BACTERIAL EMULSION.

Over ten months ago the idea occurred to me that variability in the "strength" of the bacterial emulsion was responsible, to a degree at least, for fallacious results. Therefore I proceeded, in a series of determinations of opsonic indices, employing emulsions, standardized by various methods, to depict graphically by Chart 2 the indices for their respective bacterial emulsions. Pursuant of this, in association with other observations that I desired to present, I selected from the service of Dr. Charles H. Frazier, in the University Hospital, the case of a patient with tuberculous arthritis of the knee.[1] After treatment by extension and plaster cast for two months, an arthrotomy was performed Nov. 22, 1906, and four days later, the opsonic index was found to be low, 0.66, using an emulsion averaging approximately 10,000,000 bacteria per c.mm. Shortly thereafter the patient was discharged and sent to Atlantic City, only to be readmitted for resection of the knee joint Jan. 23, 1907, since which time monthly determinations of the opsonic index, employing on each occasion four differently standardized bacterial emulsions, were made.

A study of Chart 1 should demonstrate the fact that no constant parallelism exists between the curves of the indices of their respective bacterial emulsions. At times this relationship is fairly uniform, but occasionally, especially during January, when the indices for all four emulsions seemed to be ascending admirably in the "positive phase," or the period of increased resistance, and Wright's so-called "high tide of immunity" was apparently about to be maintained, at the determination made February 7, the indices for three emulsions continued to mount in the positive phase, while for one emulsion, that standardized by McFarland's "nephelometer," the index dropped almost into "negative phase." Again on April 17 the indices for two emulsions are in the "positive phase," while for the other two they continue in the "negative phase."

This irregularity in the relationship of the indices, characterized by crossing and intercrossing of the

* From the William Pepper Laboratory of Clinical Medicine; Phoebe A. Hearst Foundation.

1. In the presentation of the points which I desired to make, it seemed to me that perhaps the results would be attended with more significance if my contemplated experiments were carried out on a single individual who probably would be in the hospital ward for several months, and to this end all the data in the three incorporated charts are referable to the same patient.

various opsonic curves, indicates, I believe, that the strength of the bacterial emulsion plays an important rôle conducive to fallacious results—indeed worthy, perhaps, of more consideration than has been accorded it. For example, figuratively speaking, the amount of grass consumed by the herd on the rugged mountain side depends not necessarily on the hunger of the sheep but rather on the amount present. Just so with the unfortunate phagocyte, the amount of bacterial pabulum ingested is directly proportionate in a large measure to that available, and any deprivation limiting its capability will be conducive to fallacious indices. Believing, therefore, at the beginning of my studies that a constant bacterial emulsion of known strength should be invariably employed, I have utilized in conjunction with my other experiments one containing 10,000,000 bacteria per c.mm., but, as will be pointed out later, even this curve of opsonic indices does not agree with the clinical symptomatology. Knorr[2] has stated recently that by employing an emulsion of *Staphylococcus aureus* of definite strength and by progressive dilutions, estimating

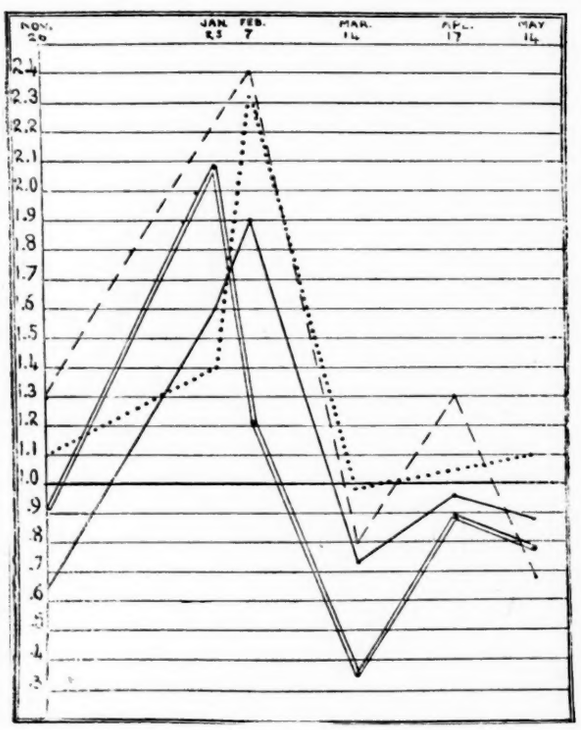


Chart 1.

—— Bacterial emulsion centrifuged for 10 minutes, then dilution of supernatant suspension so that 1 c.mm. contained approximately 10,000,000 bacteria.
.... Bacterial emulsion centrifuged for 10 minutes.
---- Bacterial emulsion centrifuged for 10 minutes and supernatant suspension diluted with 3 volumes of 0.85 per cent. saline solution.
═══ Bacterial emulsion standardized by McFarland's "nephelometer."

in each instance the phagocytic index and percentage of phagocyting cells, that the indices were directly proportional to the strength of the bacterial emulsion. My results are entirely in harmony with Knorr's experience.

Wright,[3] however, in a former communication on the preparation of the bacterial emulsion, advises the use of the supernatant suspension of bacteria following centrifugation. This, without a supplementary definite enumeration of the bacteria per c.mm., I believe capable of the production not infrequently of erroneous results; first, in that a variability in the strength of the original emulsion prior to centrifugation is productive of inconstancy in its strength after centrifugation, although the emulsion is centrifuged always for a specified time, which is very essential; second, in that, although the time element may be observed, the speed or number of revolutions per second of the centrifuge, whether operated by hand, water or electricity, is variable on different days and hours in the same day, depending on the power of the operator, the water pressure or strength of the electric current. These points may appear insignificant, but, when taken into consideration with other detrimental influences concerned in opsonic work, play a more important part than is surmised.

RELATION OF PHAGOCYTOSIS TO PERIOD OF INCUBATION.

Phagocytosis is dependent directly on the length of time the leucocytes and bacteria are allowed to incubate.

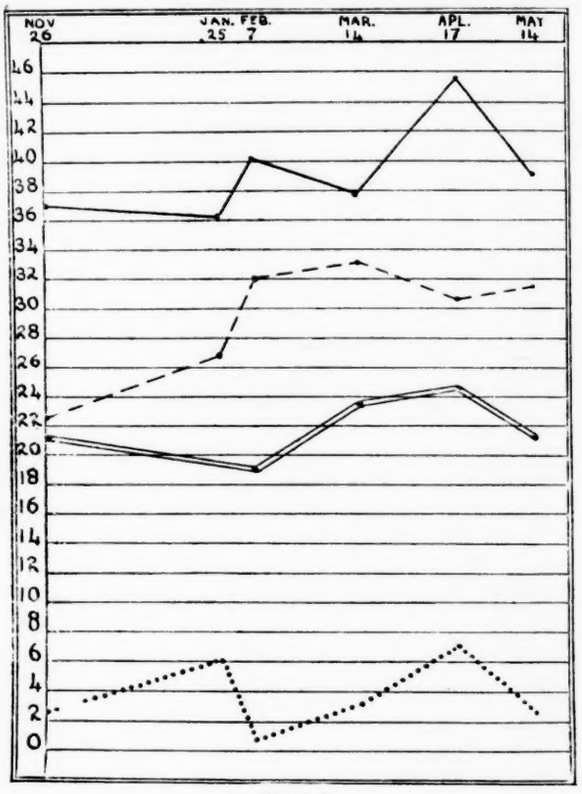


Chart 2.

—— Patient's serum plus washed leucocytes plus bacterial emulsion employing NaCl solution of 0.6 per cent. and sodium citrate 1 per cent.
.... No serum. Washed leucocytes plus bacterial emulsion employing NaCl solution of 0.6 per cent. and sodium citrate 1 per cent.
---- Patient's serum plus washed leucocytes plus bacterial emulsion employing NaCl solution of 0.85 per cent. and sodium citrate 1 per cent.
═══ Patient's serum plus washed leucocytes plus bacterial emulsion employing NaCl solution of 1 per cent. and sodium citrate 1.5 per cent.

The figures from 0 to 46 in the vertical column represent the average number bacteria pro phagocyte.

Its degree is variable with different bacteria and is influenced by temperature, 37 C. (98.6 F.) being most desirable for the majority of bacteria, although phagocytosis has been observed to occur at room temperature. A comparatively weak emulsion, one containing approximately 1,000,000 bacteria per c.mm., was required in my experiments, because as time progressed the ingested bacteria became too numerous for easy enumeration.

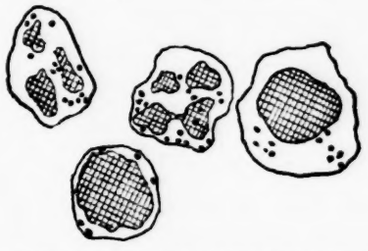
2. THE JOURNAL A. M. A., April 13, 1907, 1255.
3. Potter, Ditman and Bradley: THE JOURNAL A. M. A., Nov. 24, 1906, 1722.

For an hour to an hour and a half phagocytosis was apparently directly proportional to the period of incubation. After that time the leucocytes began to degenerate, because of the action of the leucocidin formed by the *Staphylococcus pyogenes aureus,* and an accurate estimation was rendered impossible. My experience has justified the belief that an incubation of a half-hour is more reliable than a shorter period in that it furnishes a more trustworthy opsonic index. At least in the cases where I have employed the longer incubation period the agreement between the opsonic index and the clinical symptomatology has been more constant.

Explanatory of this, it seems reasonable to suppose that in the longer period the opsonins are given a greater opportunity to exert their full influence on the bacteria and consequently the result is a more truthful exponent. On the contrary, during the longer period the ingestion of bacteria by the leucocytes is ofttimes so extensive as to make an exact enumeration almost impossible. At room temperature phagocytosis for *Staphylococcus pyogenes aureus* was markedly retarded, and five to six hours were insufficient to produce the same degree of bacterial ingestion as is usually noted for an incubation of fifteen minutes in the thermostat. After this time further observations are useless, because the leucocytes lose their vitality and lead necessarily to erroneous results.

SPONTANEOUS PHAGOCYTOSIS.

Apropos of the thought that all the bacteria counted within the circumference of a phagocyte were not perhaps the result entirely of opsonic influence, but that possibly spontaneous phagocytosis or the mere adhesion of bacteria to leucocytes was a factor, I was prompted to make comparative determinations in which a rather concentrated bacterial emulsion of the *Staphylococcus aureus* was employed. For this purpose the customary technic was used, excepting that in one instance the patient's serum was added, while in the other no serum was employed. The results of those observations are graphically described by a comparison of the continuous, broken and dotted curves in Chart 2.



Two large mononuclear and two polynuclear leucocytes exhibiting apparently spontaneous phagocytosis.

In all determinations it is my practice to wash the "leucocytic cream" at least three times so that the leucocytes should have been free from serum, as the volumes of salt solution employed were several times that of the blood corpuscles. Although it has been claimed that no spontaneous phagocytosis exists for staphylococci, I desire to append these observations with the explanation that perhaps the bacterial emulsion may not have been sufficiently concentrated, or that the apparent spontaneous phagocytosis may have been referable to mere adhesion between the bacteria and leucocytes, although the latter has been characterized by a marginal arrangement of the organisms, which was not the case constantly in my studies, as will be seen by the accompanying diagram.

The above condition was observed when using a decalcification fluid of 1 per cent. sodium citrate in 0.6 per cent. saline solution and subsequent washing of the leucocytes with a 0.6 per cent. saline solution, this strength saline solution apparently favoring spontaneous phagocytosis.

As will be noted in Chart 2, the addition of serum greatly accelerated phagocytosis, which, however, seemed to be directly influenced, that is, diminished by the employment of an increase in the strength not only of the saline solution but also of the sodium citrate. The thought has occurred to me that possibly the use of 1½ per cent. sodium citrate in a 1 per cent. saline solution may be too strong, exerting an inhibitory, if not deleterious, influence on opsonins. Certainly the environment of the phagocytes *in vitro* is not so propitious as it was *in vivo.* Wright and Douglas[4] claim to have demonstrated, however, that the addition of the necessary quantity of sodium citrate had no influence whatever on the behavior of the blood corpuscles. Whether or not this statement is applicable to strengths of sodium chlorid greater than normal saline I am at present unprepared to say, but an inspection of the chart will reveal the fact that the number of the bacteria ingested by the leucocytes was less with the saline solutions of increased strength.

Wright has observed spontaneous phagocytosis of tubercle bacilli in certain concentrations of salt solution. Davis[5] very recently has demonstrated beyond question spontaneous phagocytosis for the influenza bacillus. Opsonins, therefore, are apparently not the sole factors concerned in the ingestion of bacteria by leucocytes, and the theory that they are derived, according to Metchnikoff, in part at least, from the leucocytes (in spite of the fact that there seems to be no relation between opsonins and leucocytosis) may yet deserve credence.

ENUMERATION OF LEUCOCYTES.

It has been my experience, naturally, that the larger the leucocyte count the more the reliance on the opsonic index. Counts of less than 100 leucocytes are especially likely to be misleading, and in my work it has been the practice to enumerate from 100 to 200 leucocytes, preferably the latter number, which is not so difficult using the percentage method of Simon. In estimating the number of phagocyting leucocytes both the large lymphocytes, transitionals and polymorphonuclears were considered because of the not infrequent phagocytic activity of the first and third as shown in the above diagram. This I believe to be just as important as the total enumeration of all three varieties of leucocytes, whether phagocyting or non-phagocyting.

TEMPERATURE.

I have also found that my results are more consistent since the employment of bacterial suspensions, decalcification fluids and saline solutions of a temperature maintained as nearly as possible at 37 C. (98.6 F.). In accordance with this I have endeavored also to insure a like temperature for the blood serum and "leucocytic cream."

NORMAL AND PATHOLOGIC VARIABILITY.

It would seem improbable to believe that any index very variable for the normal could be of great significance and utility in the determination of pathologic conditions. McFarland[6] has found the phagocytic count,

4. Proceedings of the Royal Society of London, lxxxii, 357, 1904.
5. THE JOURNAL A. M. A., May 11, 1907, 1567.
6. Medicine, April, 1906.

in individuals giving no history of any suppuration or disease whatsoever, to vary from 4.125 to 23.2. In justice, however, to the opsonic index, we must remark that we regard standardization by the "nephelometer" as very unreliable, inasmuch as it is impossible for the naked eye to differentiate the degree of turbidity even after the addition of thousands of bacteria. Potter, Ditman and Bradley's[5] normal indices varied from 0.81 to 1.18; Wright and Douglas'[7] from 0.85 to 1.2, and my own from 0.75 to 1.25. Park has recently drawn attention to the fact that the index varies greatly in comparative tests with leucocytes obtained from selected normal individuals.

AGE OF CULTURE AND LIFE OF OPSONINS.

Knorr,[2] in experimentation using forty-six-hour-old and forty-two-day-old cultures, demonstrated that the aging of the culture seems not to affect the phagocytic or percentage indices. In my work I have employed only twenty-four and six-hour-old cultures, recently using exclusively the six-hour-old cultures, with identical results. On the contrary, different strains of the same organism give variable indices.

Knorr's results show that "the serum loses one-half of its opsonic power in twenty-four hours; after this there is practically no further loss in the following twenty-four hours. The value then rapidly drops, but, however, does not wholly disappear until after five days."

PERSONAL EQUATION.

As many and varied as are the opportunities cited above that may lead to erroneous results, impairing the value of the opsonic index, that factor, paramount among its fellows, blighting the practicability of the opsonic determination on its present basis, is the personal equation. The importance of this negatively and positively can not be overestimated and plays an even more important rôle, considering the intricate technic, than the determination of slight variations in leucocytosis in a given case by different observers. On the contrary, it can be readily appreciated that it is utterly impossible for any single observer to master all the work on more than one or a very few cases, even though he may sacrifice all his time for the cause. Consequently the necessity arises of employing a corps of low-salaried workers or "leucocyte counters," in most instances an impractical procedure.

WRIGHT VERSUS SIMON.

It has been found of great interest in my determinations to measure the constant ratio existing between Wright's phagocytic index and Simon's percentage index of phagocyting leucocytes, especially the percentage index because of its greater value. A consideration of paramount importance in this connection and never to be disregarded is not to use a too concentrated bacterial emulsion, especially when employing Simon's method, as the percentage of phagocyting leucocytes will be too great, reaching 100 constantly, thereby nullifying the index. Simon[8] himself appreciates this, and in a late communication writes: "The percentage of phagocyting cells is to a certain extent dependent on the number of organisms present, it is advantageous to work with an emulsion which, with normal blood serum, should not give a higher percentage than 50." In accordance with his suggestion, we have found it is also desirable to dilute the blood serum from twenty to forty times.

A review of Chart 3 will serve to elucidate this point by a comparison of the double line (==) curve (using a weak emulsion) with the dotted line (....) curve (using a concentrated emulsion).

OPSONIC DIAGNOSIS.

The value of the opsonic index as a diagnostic measure depends on the specificity of opsonins. The methods are three: 1. Derivation of the opsonic index from the blood serum. 2. Comparison of the indices of heated and unheated serum. 3. Comparison of indices of blood serum and exudate or transudate of the same case. The results obtained by Wright and Douglas and Bulloch[9] relative to the specificity of opsonins have not been confirmed by Simon, Potter, Ditman, Bradley and others, so that at the present time the diagnostic value of the opsonic index is minimal.

OPSONIC PROGNOSIS AND THERAPY.

Pottenger,[10] in an excellent article on tuberculin therapy recently, attributes no inconsiderable amount of im-

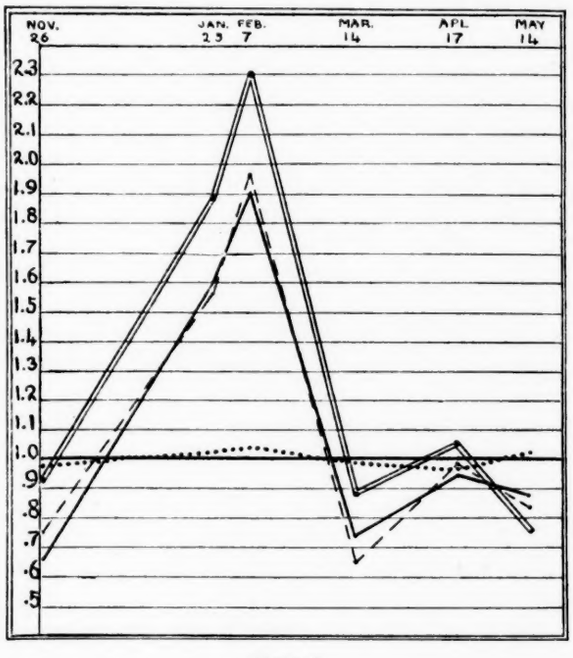


Chart 3.

—— Wright's phagocytic index using emulsion of approximately 10,000,000 bacteria to c.mm.
---- Simon's percentage index using emulsion of approximately 10,000,000 to c.mm.
== Simon's percentage index using supernatant suspension of bacteria of an emulsion centrifuged for 10 minutes and diluted with three volumes of 0.85 per cent. saline solution.
.... Simon's percentage index using supernatant suspension of bacteria emulsion centrifuged for 10 minutes.

portance to the prognostic value of the opsonic index. He states that in 150 cases of lupus in which the patients had done badly a low opsonic index persisted, while in those that had responded to the treatment the index was higher. With Wright, Bulloch,[9] Lawson and Stewart[11] he contends that the therapeutic use of tuberculin (Koch's T. R.) in tuberculosis invariably produces a rise in the opsonic index. Not only this, but in sanatorium treatment he has secured 20 per cent. more cures apparently with tuberculin than without, and, moreover,

7. Proc. of Royal Soc., lxxii. 357.
8. The Journal A. M. A., Jan. 12, 1907, 139.
9. Lancet, Dec. 2, 1603, 1905.
10. The Journal A. M. A., May 11, 1907, 1570.
11. Lancet, Dec. 9, 1905.

he has confirmed the opinions of Trudeau[12] and Turban[13] that the tendencies to relapse are fewer and the results more permanent following tuberculin therapy. Unfortunately I have had no experience with tuberculin therapy in conjunction with the opsonic index, but in the case cited above on whom determinations of the opsonic index were made periodically it will be noted by a glance at Chart 1 that the general trend for the last three months of the opsonic index has been toward or in the "negative phase," in spite of the fact that the clinicians persistently assert that the patient's condition is steadily improving.

In 1833 a German advanced the idea expressed in the title of a monograph that all contagious diseases contain in their contagium the materials necessary for their cure. Therefore, the theory which underlies therapeutic inoculations in infectious diseases is by no means new, although, as Ohlmacher[14] says, "it remained for Wright to so modify the vaccine of Pasteur as to arouse in the serum of Buchner a substance which prepared the disease-producing microbe for destruction by the phagocyte of Metchnikoff, thus bringing to practical humanitarian usefulness the laboriously studied theories of three pioneers in biologic therapy."

Although my experience thus far with artificial autoinoculation has been most gratifying and my results in close harmony with those of other observers, I am disposed to believe there is a tendency to over-valuation even in this method of therapy. Certainly its application has not been sufficiently prolonged, and the results, *pro* and *con*, have not been so numerous as to warrant a decisive opinion, but I am satisfied that time and again patients recover spontaneously, coincident with "vaccine" therapy. Fortunately brilliant results are obtained independently of routine determination of the opsonic indices, the quantity of "vaccine" and the frequency of inoculations being controlled solely by the clinical symptomatology.

Koch's new tuberculin (T R) is undoubtedly more reliable and preferable as a therapeutic agent in tuberculous infections. For the infections other than tuberculous a suspension of the organisms cultured on agar is made in physiologic salt solution. After sterilization by exposure to a temperature of 65 C. (149 F.) for an hour, and the addition of a preservative, this material, which is known as the "vaccine," is ready for inoculation. This emulsion is always standardized by determining the number of bacteria per c.c. of fluid.

The impracticability of Wright's method is further apparent from the fact that he urges daily determinations to ascertain the condition of the positive or negative phase, or whether the high tide of immunity has been reached or, on the other hand, is being maintained, thereby regulating the amount of "vaccine" to be inoculated from time to time and avoiding any "cumulation in the direction of the negative phase." I do not doubt the wisdom of these precautions theoretically and, were the application universally feasible, would enjoin its constant employment. Unfortunately, through errors in technic and especially not infrequent disagreement between the opsonic index and clinical symptomatology, we have invariably resorted to the latter as our guide in artificial autoinoculation therapy.

On the other hand, the dangers from over dosage or too frequent administration of the "vaccine" are not insignificant, and errors through carelessness or uncurbed enthusiasm in the employment of "vaccine" therapy in the untrained hands of the general practitioners will lead inevitably to results, if not disastrous, at least avoidable.

12. Tr. Amer. Physicians, 1900.
13. Quoted in Weicker's Beitrag. z. Frage d. Volksheilstaetten, 22.
14. THE JOURNAL A. M. A., Feb. 16, 1907, 572.

SUMMARY.

1. The phagocytic index is, as a rule, directly proportional to the strength of the bacterial suspension, which in all cases where consecutive comparative studies are to be made should be standardized by definite enumeration of the bacteria pro c.mm. Opsonic indices dependent on the supernatant suspension of bacteria, following mere centrifugation and the bacterial suspensions obtained by standardization with McFarland's "nephelometer," are fallacious.

2. For a certain time phagocytosis is directly proportional to the period of incubation. After this time degeneration of the leucocytes renders a trustworthy determination of phagocytosis impossible. Phagocytosis does occur at room temperature, but incubation at 37 C. (98.6 F.) for most bacteria is more conducive.

3. Spontaneous phagocytosis or mere adhesion of bacteria to leucocytes may be a factor in the production of erroneous opsonic indices. In any event, opsonins do not appear to be the sole agents concerned in the ingestion of bacteria by leucocytes.

4. Not fewer than 100 leucocytes should be counted in estimations of phagocytosis, and these enumerations should include large lymphocytes and transitionals as well as polymorphonuclears. In short, the higher the leucocytic count the truer the index.

5. Maintenance of body temperature during the process of technic seems to influence beneficially the phagocytic index. Sudden fall of temperature acts conversely.

6. The inconsistency of the phagocytic index for normal individuals is apparently confirmed by the unreliability of the opsonic index for pathologic cases.

7. Aging of bacterial cultures (6 to 24 hours) seems not to affect materially the phagocytic index.

8. Knorr states that the opsonic power of the serum is diminished one-half in twenty-four hours, and that after forty-eight hours there is a gradual diminution, complete loss occurring after five days.

9. Aside from the technical difficulties, the question of personal equation involved in opsonic determinations is so serious as practically to nullify the value of the method in most instances.

10. Simon's percentage index is apparently of more value from the practical standpoint than Wright's phagocytic index because of its relative constancy and comparative ease of determination.

11. The experiences of the majority of observers indicate that the diagnostic value of the opsonic index is minimal.

12. The consensus of opinion favors the belief that, prognostically, some utility attaches to the opsonic index, especially in the field of tuberculosis and in the laboratory where it can be applied to test the virulence of organisms and the strength of sera whose value depends on opsonins.

13. In the heralded unlimited field of therapy, where the opsonic index is ordained to play a star rôle, its utility seems destined to pass into oblivion, not only because of its inconstancy in agreement with the clinical symptomatology but especially because of its impracticability.

I desire to thank Dr. M. P. Ravenel of the Phipps Institute, who studied Ross' methods at the Rockefeller Institute, for valuable technical suggestions.

1819 Chestnut Street.

THE VENOUS PULSE.*

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AND
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As a result of long clinical observation and application to the known physiology of the circulation James Mackenzie published in 1902 the "Study of the Pulse." This marked a new era in the study of cardiac diseases, by his practical manner of discriminating between the pathologic alterations of the fundamental properties of heart muscle (rhythmicity, excitability, conductivity, contractility and tonicity) first demonstrated by Gaskell and subsequently in greater detail by Englemann and his pupils.

Mackenzie's results depended for the most part on a careful analysis and comparison of the venous and arterial pulses, the former giving the auricular time, the latter the ventricular, and the main features of his interpretation have been accepted without any question.

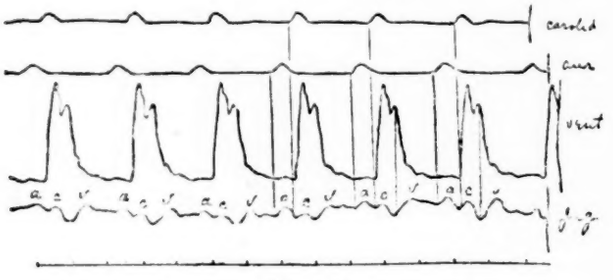


Figure 1.

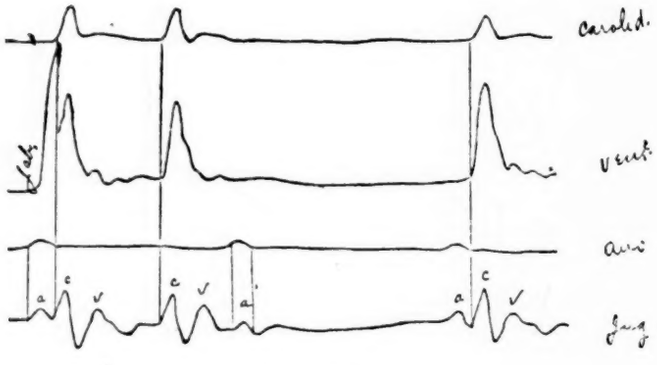


Figure 2.

In spite of the ingenious methods adopted by him, however, there may be still some doubt as to whether the features of the jugular pulse really correspond to the phases of the cardiac cycle to which he ascribes them, especially as the jugular pulse has seldom been the subject of experimental investigation, by which alone such questions can be decided.

Before taking up the clinical analysis of the jugular pulse we therefore determined to acquaint ourselves with its features in animals, in which the actual movements of the heart can be recorded with an exactness impossible in man.

After attempting to record the venous pulse by several other methods we have found that that used clinically gives the tracing most satisfactorily and easily. A funnel was used therefore as a receiver over the jugular vein where pulsations were visible in the necks of dogs, the skin having been shaved previously. The waves were transmitted by air in tubing connecting it with a very sensitive tambour, the writing point of its lever in contact with the smoked paper of a kymograph. The carotid pulse was registered by means of a cannula in the carotid connected to a Hurthle's sphygmomanometer. The relation of the waves in the venous pulse to the occurrences in the cardiac cycle was obtained by taking simultaneous tracings from the exposed auricle and ventricle.

In order that the heart might retain as nearly as possible its normal position supported by the pericardium and the anterior mediastinal folds, the sternum was not disturbed, but a window was made in the left pleural cavity by removing two or three inches of the third, fourth and fifth ribs. Small apertures were made in the pericardium and through these stitches were taken in the auricle and ventricle and the thread from each attached to the membrane of the tambour, which connected with another writing on the kymograph.

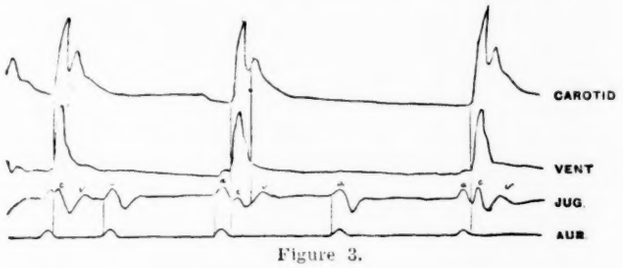


Figure 3.

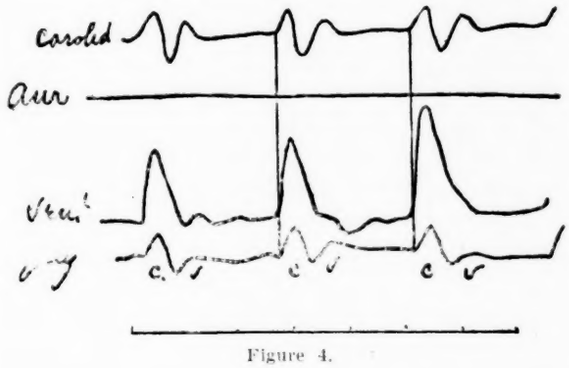


Figure 4.

The animals were anesthetised with morphin and paraldehyd; a tracheotomy tube had been inserted for artificial respiration. The time was recorded in fifths of seconds by Jacquet's chronometer.

In a number of experiments the venous pulse taken before and after opening the thorax was found unchanged by the operation. In all the animals examined a good venous pulse was found.

In the jugular tracing, as a rule, a series of elevations separated by deep depressions is seen. The elevations are composed of three minor waves, which have been marked *a, c, v,* after Mackenzie's method (Fig. 1).

One of the waves (*a*) has always been ascribed by Mackenzie to the auricular contraction, and we find in our tracing that on projecting the auricular tracing on the jugular the middle wave corresponds exactly in its commencement and fall with the auricular contraction and relaxation.

The succeeding wave *c* resembles *a* closely in appear-

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

ance as a general rule, and in our tracings begins with the commencement of ventricular systole and reaches its apex soon after the ventricle has reached its full contraction. It then begins to fall and its further course is obscured by its fusion with the next phase of negative pressure. The exact causation of this wave is disputed. According to Mackenzie the *c* wave is due to the pulse of the carotid artery underlying the vein being transmitted directly to the vein. Others have supposed that the wave arose from the aorta and large arteries in the thorax stiffening in the beginning of the systolic outflow and imparting the wave to the veins above them. Morrow[1] has recently revived Potain's views that this wave is produced in the interior of the heart by the ventricle in systole and is transmitted along the course of the vein to the recording instrument.

Our results point toward the view that *c* is not a simple carotid wave propagated through the vein, for it is

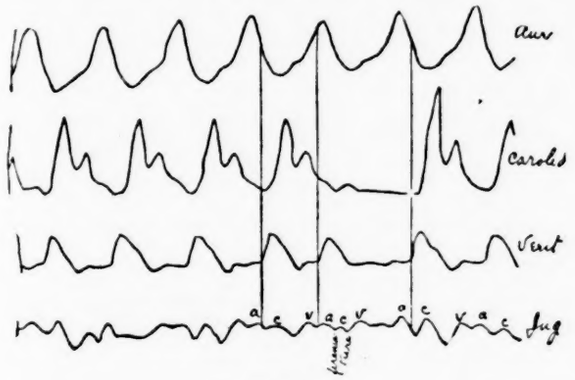


Figure 5.

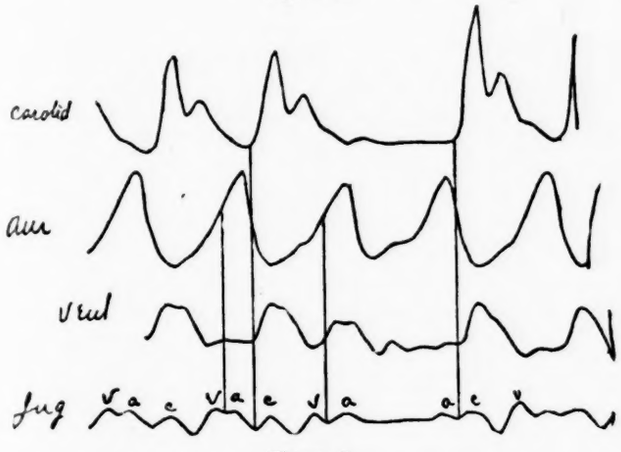


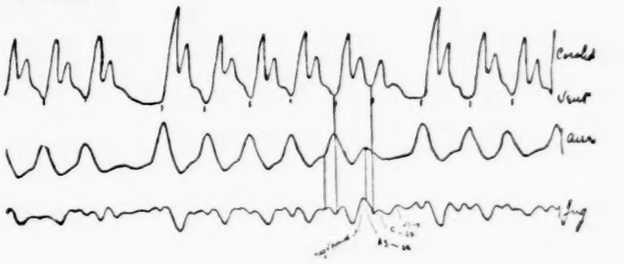
Figure 6.

often present when the jugular pulse is recorded by a method which does not involve pressure over the carotid. Thus in a number of experiments the vein was exposed and the thread of a tambour was attached to it by means of a stitch through the adventitia. The vein is thus drawn away from the carotid rather than pressed against it as in the ordinary clinical method of registration, yet a distinct *c* wave could be made out and this persisted even when the vein was dissected free from the underlying tissues, and was separated from them by the handle of a scalpel. The *c* wave, then, we regard not as a wave directly transmitted from the underlying carotid but as arising within the thorax. It occurs when the thorax is opened and thus is not due to any change in the general intrathoracic pressure.

1. British Med. Jour., 1906, p. 1807.

We are disposed to regard the *c* wave as not of local origin in the neck, but are unable to decide whether it arises in the heart or in its immediate neighborhood. The question, while of interest in relation to the physiology of the heart, hardly seems to be of importance in regard to the clinical use of the method of recording the jugular pulse.

After *c* a deep depression follows, often much better marked than in Figure 1. This phase of negative pressure following immediately on *c*, the exact point of its commencement, can not be accurately determined, but the lowest point occurs about the time when the ventricle begins to relax at the end of its systolic plateau. The auricle has reached its full diastole before the apex of *c* is reached, and during the negative phase remains passive. The period along with that occupied by *c* thus represents the free inflow of blood from the veins into the auricle.



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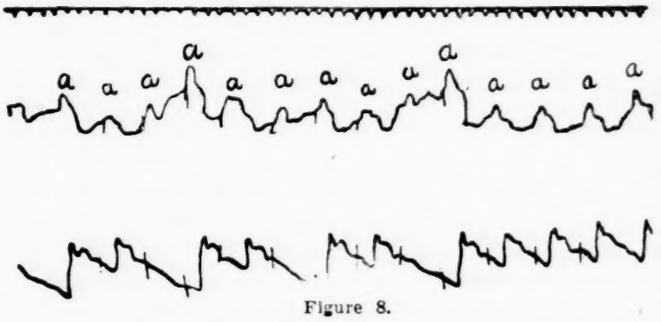

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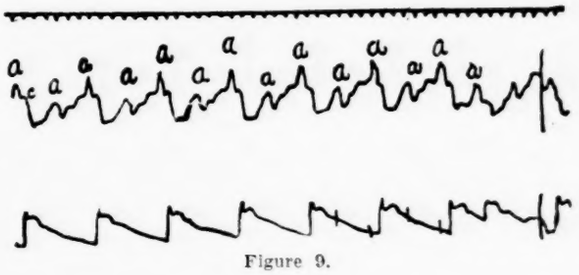
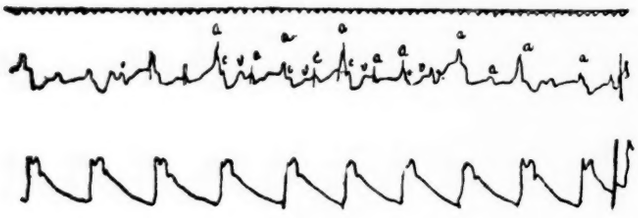


Figure 9.

The next part of the venous pulse following on the phase of negative pressure shows some variations in appearance. Very often there is a slight rise of the lever soon tapering off into a horizontal line slightly above the level of the lowest point. This is unquestionably due to the pressure in the veins rising as the auricle becomes filled and the current is checked. But this often is absent or little marked, the phase of negative pressure being immediately followed by a well-defined wave which has been indicated by the letter *v*. This reaches its highest point as the ventricle becomes fully relaxed and begins its phase of rest in complete dilatation. The wave then slowly declines and may be followed by a very feeble oscillation before *a* commences the cycle again. In most cases, however, the lever shows no movement after the decline of *v* until it rises again in *a*.

The explanation of *v* has been a matter of some dispute, some holding that it is merely the wave of stasis following on the checking of the inflow as the heart becomes distended with blood. There seem to be unanswerable arguments against this explanation, however. In the first place *v* is often preceded by a distinct stasis wave which is separated from the true *v* by a short phase in which the tracing runs horizontal or rises very slowly. This stasis wave is quite insignificant in size compared with *v*.

Next, *v* always occupies a distinct relation to the ventricular movement and is entirely absent when the auricle contracts without the ventricle. This is well shown in Figure 3, in which the vagus had been stimulated and the impulse of the first auricular contraction failed to pass the block and arouse the ventricle to activity. Here the *a* wave in the jugular tracing is followed by a deep depression, comparable to that ordinarily occurring, but no *v* is to be made out.



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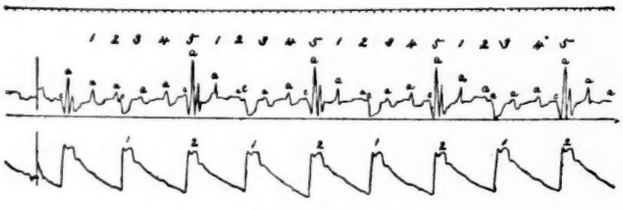

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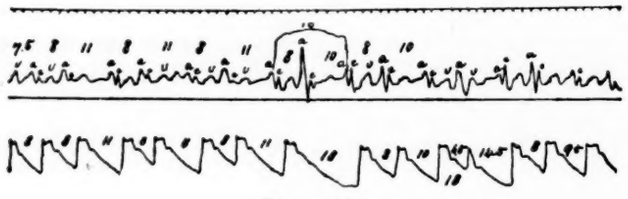

Figure 12.

In the next cycle analogous conditions apparently prevail, the heart not yet having recovered from the inhibition, but here the impulse passes the block, the ventricle contracts, *c* appears in the jugular tracing and is followed at the ordinary interval by a well-marked *v*. It is to be noted that the phase of negative pressure is approximately equally well marked in these two cycles. In several other experiments the same results followed when the ventricle failed to contract; *c* was absent in the jugular pulse and also *v*.

On the other hand, in a certain number of cases the heart was arrested by vagus stimulation and the ventricle was excited to contract by mechanical or electrical stimuli. Here the auricle remained passive or in some cases an auricular contraction followed the ventricular (Fig. 2). Here the ventricular contraction in the second cycle is indicated in the jugular pulse by a large *c* followed by a deep depression and then by a very marked *v*. After a short pause an auricular contraction occurs and in the jugular pulse *a* may be made out followed by a depression and then by a slow oscillation.

The third cycle is introduced by an auricular contraction which leads to a ventricular systole and in the jugular pulse *a, c, v* may be made out followed by a pause and then a slow oscillation which continues for some time and may have been mechanical in origin. In Figure 4 the vagus stimulation arrested the auricle completely, while the ventricle was aroused to contraction by a series of shocks. The jugular tracing presents a series of well-marked *c* waves and *v* also may be identified, though less clearly than in many other tracings.

The *v* wave thus appears to be dependent on the occurrence of ventricular systole in the dog. And the same holds true in man, for in the numerous tracings in cases of complete or partial block when an auricular contraction occurs alone no *v* appears in the jugular

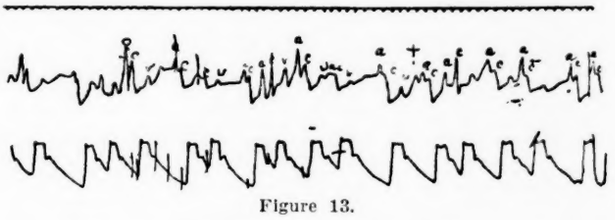

Figure 13.

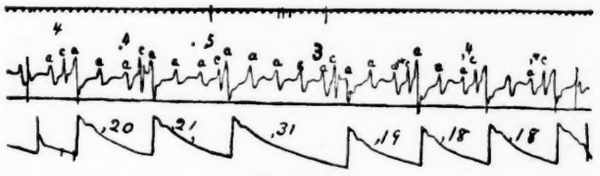

Figure 14.

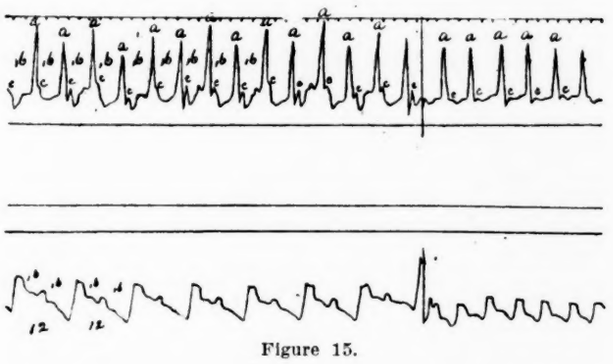

Figure 15.

pulse, but when a ventricular beat is indicated in the radial pulse the corresponding *c* and *v* can generally be found in the jugular in a case of heart block (Fig. 10).

Occasionally in the dog we have failed to observe the *v* when the rate of the pulse was very rapid, but as soon as the pulse became slower the *v* became quite evident.

The *v* wave therefore, is not due to stasis, but our experiments do not suggest in themselves a satisfactory explanation. Some light has been thrown on the subject by the investigations of Keith,[2] who showed that the points at which the superior and inferior venæ cavæ pierce the pericardium serve as fulcra on which the musculature of the heart acts, through the attachment of the pericardium to the cervical fascia above and the central tendon of the diaphragm below. He supposes that when the auricles contract the auriculoventricular septum is pulled upward and the following ventricular contraction

2. Lancet, Aug. 11, 1906, p. 631.

lowers it again, thereby assisting in filling the auricle. On this view the relaxation of the ventricle might be supposed to exercise the reverse effect on the auricle and cause an increase in the intra-auricular pressure which would be indicated by the wave *v*. This view we find has already been suggested by Francois-Franck and others. Our experiments are not sufficient to prove or disprove this explanation, but in verifying the dependence of the *v* wave on the occurrence of the ventricular contraction they lend a certain support to it. After *v* is completed a few very weak oscillations sometimes are observed in the tracing, but they may be neglected, as they are not constant and appear to be mainly due to the mechanism employed.

In some of our experiments the normal heart rhythm was disturbed by occasional electric shocks applied to the ventricle causing a contraction independent of the auricular impulse (ventricular extra-systole). One of these is shown in Figure 5, in which, while the auricle maintains its usual rhythm, a weak premature contraction is seen in the ventricles and a minute movement in the carotid. A pause then follows in the ventricle and carotid until the ventricle is again aroused by the following auricular impulse. In the venous tracing the first alterations observed are a shortening of the *a-c* and the *c-v* intervals. The premature contraction of the ventricle explains the former, the shortness of the ventricular movement the latter, for in the only partially recovered ventricle the contraction is not only weaker than normal, but the relaxation is complete much sooner. After the *v* there succeeds a long pause until the following auricular systole causes a wave more marked than usual separated from *c* by a deeper depression. The pulse then resumes its usual form.

The increased size of the next *a* wave is probably due to the accumulation of the blood in the auricle through the latter chamber not having succeeded in emptying itself completely before the premature systole of the ventricle occurs. The large *c* is due to the powerful post-compensatory ventricular contraction. In some other experiments the *a* wave of the abnormal cycle was much increased in height and *c* very small. The increased *a* is due to the inflow from the auricle into the ventricle being checked by the contraction of the latter, the pressure in the vein being suddenly increased accordingly. When the ventricle was stimulated soon after the last normal systole the contraction was sometimes so weak that no wave appeared in the carotid and the extra-systole caused no *c* or *v* in the jugular (Fig. 6).

When the auricle was stimulated electrically and an extra systole occurred, as in Figure 7, the most marked feature in the jugular pulse was an apparently exaggerated *v* wave. On careful measurement this was found to be compounded of the normal *v* of the preceding cycle and the *a* arising from the stimulus. The *c* followed this *a* apparently at the normal interval, and the chief further departure from the normal was the very slight development of the negative phase. Apparently the premature weak systole of the auricle was insufficient to empty it and the subsequent relaxation was too slight to relieve the accumulation in the vein.

CASE 1.—Mrs. D., aged 63, came under observation during September, 1906. A diagnosis was made of general arteriosclerosis, causing nutritional changes in the auriculoventricular fibers of the heart, thereby depressing their conductivity.

Except in December, when the tracings present nothing abnormal, the regular rhythm was varied by an occasional failure of the conduction, one fewer contraction occurring in the ventricle than in the auricle (Fig. 8). The auricular rhythm was perfectly regular, the ventricle simply occasionally failing to respond to one of the auricular contractions. Here there was often further evidence of the failing conductivity in the fact that the last beat of the carotid occurred at an unusually long interval after the corresponding *a*. The blood failing to enter the full ventricle during the pause, the vein was more distended than usual and a large elevation occurred in the jugular tracing at the next *a*.

A more marked failure of the conductivity led to the omission of every third beat of the ventricle, two impulses from the auricle inducing contractions in the ventricle, the third having no effect. Here again the second beat of the carotid followed at a longer interval after the *a* than the first, showing increasing fatigue of the conduction, which culminated in the complete failure of the third impulse to pass the block.

The next development of conduction failure is evidenced by every alternate impulse descending from the auricle failing to arouse the ventricle (Fig. 9). The contractions of both auricle and ventricle remain perfectly regular in the rhythm, but A = 2 V, i. e., half-rhythm is developed. After each ventricular beat there is an auricular contraction which is fairly normal in character except that no ventricular contraction follows. There is accordingly a slow escape of the blood from the vein, which becomes unusually tense and when the next auricular systole follows it finds the vein in this condition and the ventricle full. The second auricular contraction acting on a full vein thus causes a marked elevation and the subsequent auricular diastole along with the immediate inflow into the now empty ventricle allows the lever to fall to its lowest point. The tension of the full vein causes a more sudden rise and fall of the lever than in the first frustrated auricular contraction.

Very frequently we have observed a curious anomaly occurring in the evidence of the accumulation of blood in the vein. For while this half-rhythm persists, the elevation of the jugular tracing may occur only every fourth beat of the auricle, although every second beat is identical in its relation to the ventricle (Fig. 10). This anomaly may occur at intervals in tracings in which, as a rule, every second auricular contraction indicates backing up in the vein or may persist for a long period alone.

This elevation of the tracing is quite independent of the respiration, for it occurs when the breath is held, and the auricle appears to contract perfectly regularly whether the backing-up occurs in the vein or not. The interval between the *a* and the radial pulse also seems to be the same whether the elevation occurs or not. In view of the conditions to be discussed, however, it seems to us probable that the presence or absence of this phenomenon must depend on slight variations between the auricular and the ventricular systoles, these variations either being too small to be recorded by the method or being concealed by some other factor in the tracing. In other tracings in which 2-1 rhythm was present the marked elevation occurred only every sixth beat and at one time only every tenth auricular contraction.

A still more marked degree of auriculoventricular arhythmia which persisted for many weeks is where the auricle beats five times to the ventricle's twice, or a 5-2 rhythm. In this form the auricle and ventricle each preserves its perfectly regular rhythm, but in the auricular tracing there is a striking excursion at every fifth beat. The first *a* after this (Fig. 11) is also well marked

without any subsequent depression, the second *a* is less marked with a deep depression, the third resembles the second, save that the depression is less deep, the fourth presents a stronger elevation with very slight depression, and the fifth has a marked rapid upward movement and equally rapid fall, and subsequent oscillation, after which the same cycle is repeated again an indefinite number of times. The radial pulse presents no variations whatever in rate or form.

This characteristic form of venous pulse is due to the fact that in the cycle of five no two contractions of the auricle find the ventricle in the same phase of activity. The auricular contraction marked 2 (Fig. 11) is evidently the most efficient, for there is an immediate fall in the venous pressure indicating that the contents of the auricle have found easy egress into the ventricle; in fact, contraction 2 in the auricle has occurred at the same interval, before contraction 1 of the ventricle, as intervenes between auricular systole and ventricular systole in normal individuals. a^3 occurs at a less favorable phase in the ventricular movement, but the tension in the vein being reduced by the free outflow after a^2 there is comparatively little upward jerk and the diastole of the auricle permits of some inflow and corresponding fall in the vein pressure. a^4 finds a higher tension in the vein and also an unfavorable ventricular phase, and this is marked by a more sudden jerk upward and little fall afterward. The culminating point is reached in a^5, which apparently coincides with ventricular systole and in which probably no blood is driven onward by the auricular systole, but all is thrown into the vein which already shows signs of high tension; a^1 finds the ventricle in a somewhat more favorable phase and is correspondingly less marked, but only in a^2 is the optimum position for auricular systole again reached. The whole phenomenon is exactly similar to that described by one of us[3] as occurring in the dog's heart under various drugs which induce block and at the same time excite the ventricle to independent contraction. The changes in the position of *a* relative to the ventricular contraction can scarcely be made out in the ordinary tracings, but is put beyond question by the examination of those taken on fast running drums, which, however, occupy too much space to permit of publication.

In other tracings from this case the jugular pulse shows a cycle of seven *a* waves, while the radial pulse indicates three ventricular contractions. Every seventh *a* is exactly similar, but no two movements of the lever are identical in the cycle of seven. The explanation is the same as in the case of the 5-2 rhythm. In one tracing the jugular at first showed a 7-3 rhythm and then passed into the 5-2 rhythm which persisted throughout. There was obviously some change in the rate of the auricle or ventricle at the point where the 7-3 changed to the 5-2, and it was found that, while the ventricle retained its rhythm unchanged throughout, the auricle was rather slower when a 7-3 rhythm was present than when the 5-2 was developed, each of the 7 contractions occupying three and two-sevenths fifths, each of the five, three-fifths (3/5) of a second. Various other similar rhythms, such as 8-3, were met in this case, but no need for further discussion. The auricle never attained the rhythm of 3-1, though the fractions approached very close to this.

It is very difficult to determine whether there was complete block in this case or not. In the 5-2 rhythm every alternate beat of the ventricle was preceded by an auricular contraction which occupied the same relative position to it as in the normal beat. The other ventricular contraction was preceded by an auricular contraction at an interval about three times as great as the normal. If this beat arose from an auricular impulse, the time occupied in passing along the auriculoventricular fibers must have, therefore, been three times as long as usual. There seems, however, no explanation for this slow transmission, for there could have been no more fatigue of the fibers than in the other ventricular contraction, two inoperative impulses having passed along them in each case. Each alternate ventricular systole must, therefore, be regarded as arising in the ventricle without auricular impulse, and, granting this, it seems most likely that the whole ventricular rhythm was independent of the auricle in this phase.

This is rendered the more likely from the fact that when the auricular rhythm was slowed (in the 7-3 rhythm) the ventricle remained unchanged in rate. But if it be granted that there was complete block at these stages the further question arises at what point did this occur? There is a complete series of transitional forms from the 1-1 rhythm in which the conduction was adequate, through 3-2, 2-1, 5-2, to the 7-3 and 8-3 rhythms, and we find it quite impossible to state at what point the ventricle became independent of the auricular tutelage.

An important point is that in this complete block the auricle and ventricle each maintained a perfectly regular independent rhythm. The block did not seem to be affected by large doses of atropin, so that it was not of inhibitory origin.

CASE 2.—Mrs. P., aged 26. Diagnosis, acute puerperal septicemia, with secondary toxic depression of the conductivity of the auriculoventricular fiber.

The tracing in this case (Fig. 14) may be contrasted with that of the previous one in some respects, while there is a superficial resemblance between them in the fact that in each the radial pulse is slow while the jugular is much more rapid. The radial is more irregular than that of the first case, there often being alternation of long and short beats. The essential difference in the two cases, however, is that no spontaneous ventricular rhythm has been developed in this one. Each ventricular contraction follows an *a* wave in the jugular tracing. Block is present, for many auricular impulses have no corresponding ventricular contraction, but no impulses are generated in the ventricle itself.

In some parts of the tracing the ventricle responds only to every third impulse of the auricle; in others the pause varies in length, the radial pulse alternately failing to follow two impulses of the three, and one of two; in others the beat of the ventricle corresponded alternately to three and to five auricular contractions. In some of those further evidence of failure conductivity was offered by the *a-c* interval. Thus in the tracing given (Fig. 14) the first *a-c* pause is 0.4 seconds; there then follow two inefficient auricular systoles, the third one being followed again at 0.4 of a second by a *c* wave. Then follow three inefficient *a* waves and the next *a-c* interval is 0.5 of a second. After a still longer pause in the ventricle (4-*a* waves) the *a-c* interval falls to 0.3 of a second and afterward 0.4 becomes the rule. The shortening of the *a-c* interval after the long pause at once suggests the recovery of the fibers from fatigue, especially as the preceding transmission was unduly prolonged as if from progressive exhaustion.

The difficulty arises, however, that during the long pause the fibers were being bombarded by a succession of

3. Jour. Physiol., xxv, 49.

impulses which, if transmitted, would have exhausted the conductivity just as much as if a ventricular contraction had occurred. It may be suggested, however, that the transmission was feeble throughout the auriculoventricular fibers and that each consecutive impulse penetrated less deeply into them. While the upper end of the fibers was thus kept from regeneration by the constant receipt of impulses, its fatigue may have acted as a shield to an increasing length of the fibers measured from the lower end. Finally the regeneration of this part may have become so complete that it compensated for the fatigue of the upper end and an impulse passed at an unusual speed through the whole length of the fibers and originated a new ventricular contraction.

CASE 3.—Mr. K., aged 60. Diagnosis, carcinoma of stomach, with secondary anemia, cardiac irregularity due to changes in the rhythmic area of the heart (sinus venosus).

Tracings from the radial and jugular sometimes showed a pulse fairly regular in appearance, though the variation between consecutive pulse lengths was greater than can be regarded as normal. But groups of two separated by rather longer intervals often occurred, as in Figure 12, where the pulse lengths are 8, 8, 11, 8, 11, 8, 11. The intervals between the waves of the jugular are equal to those of the radial, showing that these irregularities were not due to failure of conduction in the auriculoventricular fibers nor to the irritability of the ventricle.

The error in fact lies higher than the auricle, probably either in the rhythmic area or in the junction between this and the auricle. Occasionally, however, as in Figure 12, a pause of much longer duration occurs in the radial, i. e., 18 tenths of a second, during which the jugular tracing shows an auricular contraction at the usual interval, but this *a* is very much exaggerated and the subsequent oscillation suggests a high tension in the vein. The pause in the radial is practically equal to two previous intervals together and obviously the pause is due to the failure of the auricular impulse to cause a contraction in the ventricle. This may be due to failure of the auriculoventricular fibers, but the large oscillation in *a* suggests that the ventricle is in contraction, i. e., that there is here a ventricular extra systole. This view is strengthened by the fact that a few beats later a radial pulse occurs after 6.5 followed by a pause of 11.5 while in the jugular a wave occurs after 8 and 10 tenths. This is obviously a ventricular extra systole acting on a heart in which the rhythm is already irregular from changes in the rhythmic area.

Figure 13 has been added in order to give the general character of the jugular pulse in this case and in particular to show how much the *a* varies in appearance with the fulness of the vein, the vein becoming distended in the long pause, the succeeding *a* is generally more sudden and the fall more sharp than when the pressure is low. At the point marked "x" there is seen a distinct oscillation some time after the *v* and immediately before *a*. In some instances the oscillations actually overtop *a*. We have been unable to determine the conditions of its appearance or its significance, but it tends to appear during long pauses, although it is by no means present in all of these.

CASE 4.—*History.*—Mrs. W., aged 40, had been under observation for six years, suffering with mitral stenosis and regurgitation subsequent to rheumatism. March 23, 1907, she complained of dyspnea, cough and edema of the ankles, obviously from failure of compensation. The radial pulse was generally regular with the exception of an occasional ventricular extra systole. On examination of it on one occasion after excitement and exertion, however, a typical pulsus alternans presented itself, shown in figure 15. The intervals between the successive beats were perfectly regular and even (each 0.6 of a second).

In the jugular tracing the *a* beats alternated in size in a very striking way and it is immediately seen that the larger *a* waves are those preceding the small ventricular contractions, while the smaller excursions of the jugular lever correspond to the large beats in the radial.

The rhythm of the auricle is quite regular and corresponds to that of the ventricle. On examining the tracing, the condition proved to be a simple pulsus alternans as described by Wenckebach.

It probably arose from an extra systole of the ventricle occurring some time before the tracing was taken. This extra systole was followed by a large slow ventricular contraction which was not completed when the next auricle impulse reached the ventricle and the consequent ventricular systole was weak and quick. The next impulse reaching the ventricle in diastole caused another slow and large ventricle movement which was not completed when the fourth auricular impulse arrived, and in this condition continuing caused the pulsus alternans registered in the radial tracing. So far the interpretation is that given by Wenckebach. The new feature is the alternation in the auricle, which appears to us to be purely physical; the *a* waves occurring before the ventricle is completely relaxed, a certain degree of obstruction to the outflow of blood from the auricle is met and this results in a larger wave than usual in the jugular. The next auricular systole occurs when the ventricle is relaxed, the inflow is freer, and the wave in the jugular is correspondingly smaller. We have added this tracing as an admirable demonstration of the importance of a point hitherto largely ignored, that the auricle must contract at a very definite point in the ventricular cycle if the optimum efficiency of the heart is to be attained.

Taken along with the tracing given in our first case, it shows that comparatively slight displacement in the auriculoventricular rhythm is sufficient to cause marked anomalies in the jugular pulse.

We think that more attention might be directed to the form of the auricular wave in the jugular pulse, and that as much information as to the state of the heart may perhaps be derived from this source as has occurred from the study of its time relations.

DISCUSSION.

DR. GEORGE DOCK, Ann Arbor, Mich., said that he knows of no problem in internal medicine more important than the study of the venous pulse. The important advances made in the knowledge of cardiac disease during the past five years give rise to the belief that greater discoveries may be made by the prosecution of the work along the lines of this paper. For fifty years heart disease was considered chiefly from a mechanical point of view. Before that Stokes and Graves appreciated the importance and value of the heart muscle; after that the pathologic anatomy was studied and physical diagnosis was cultivated, and the heart muscle was considered as a simple contracting muscle, working on mechanical valves. By the use of the knowledge given, physicians were enabled to make brilliant diagnoses, confirmed quickly by autopsy in many cases. From time to time cases of irregular character occurred and the diagnosis of the disease of the heart became more troublesome. Then physiology came to our aid. From the work of Gaskell, Engelmann, Wenckebach, Cushny and other physiologists, and the anatomic investigations of His and others, especially Aschoff, we recognize the heart at the present time not merely as a spiral mass of fibers, but as a very complex muscle having a peculiar set of functions, actuated not by the simple accelerator and inhibitory nerves, but by the fibers that are most conspicuous in the bundle of His.

The results of such physiologic and pathologic anatomic studies enable us to learn more of functional alterations which give rise to important physical consequences. All this subject must be interpreted clinically by a study of the venous pulse. Most of the work must be done with instruments applied to the peripheral veins; some, perhaps, by sounds in the esophagus giving curves of the left auricle. But it is important to remember that at present we are not yet able to interpret all the waves seen. It is indispensable to have precise clinical investigations, such as Dr. Grosh has done so well, worked out carefully by so careful and experienced a physiologist as Cushny and confirmed by the master mind of Mackenzie. When we consider the immense impetus given to the study of Adams-Stokes disease by the investigations of Erlanger, we can be encouraged in the hope that even more intricate clinical problems, and much more common ones, will in time be solved.

DR. ARTHUR HIRSCHFELDER, Baltimore, said that the essayists' interpretation of the C waves differs considerably from the interpretation Mackenzie placed on them in his recent communication, basing them on the very curves mentioned. The latter writer ascribes the C waves entirely to the carotid. It is interesting that Grosh and Cushny corroborate the observations of Morrow and Bard of Geneva and of himself in contradiction of Mackenzie. The V waves are very often difficult to interpret As shown by Mackenzie, and later by the experimental tracings of Hering, the V wave is coincident with the opening of the tricuspid valve. It is much easier to obtain a clear interpretation of the tracing by regarding only the fall and not the rise of the V wave. For the beginning of the descending limb shows at a glance when the tricuspid valve opens. In that case an interpretation of the tracing, before obscure, becomes clear. The reason that relatively unsatisfactory results are obtained in this work, except in Adams-Stokes disease, is that clinicians are in the habit of expecting too much from such tracings. One should remember, however, that except for tracings made with a stomach tube in the esophagus this method (Minkowski, *Deutsche med. Wochschr.*, 1906, No. 31), gives no idea at all of what goes on in the left side of the heart. It only pretends to tell of the changes occurring in the veins in the cardiac rhythm, and when the tricuspid valve opens. Therefore, the only points that one could expect to utilize by means of the venous tracings are: First, the presence or absence of tricuspid insufficiency. There are many cases where one finds cardiac breakdown, edema, etc., with the tricuspid valve closing. On the other hand, one frequently sees tricuspid insufficiency without symptoms of general cardiac breakdown. Secondly, by this means one may be able to determine the nature and origin of any irregularity, especially extrasystolic irregularities. You are also able to tell whether the irregularity arises in the auricle or ventricle. This is a point of particular importance, because any irregularities arising in the auricle are contraindications to the use of digitalis; while irregularities arising in the ventricles can frequently be cured by digitalis. In this sense the venous tracings may be of great importance. Again, one is able to determine the presence of partial heart block, or complete heart block. Partial heart block frequently can not be determined by anything except a careful interpretation of the venous tracings. Here one may have to differentiate between the two kinds, partial and complete heart block, partial heart block due to vagus action, and that due to irritation of the fibers in the bundle of His. Here again one is confronted with a question of great practical importance in the use of digitalis. Digitalis heart block from the use of comparative small doses of digitalis, as shown experimentally, is due to the action of the digitalis on the vagus center. True organic heart block is due to a lesion of the fibers in the bundle of His.

DR. GEORGE W. NORRIS, Philadelphia, urged the necessity of studying cardiac diseases by the method mentioned, and recommended for the purpose the Jacquet cardiosphygmograph. This instrument is small and portable. With it any three pulsations can be simultaneously recorded on smoked paper. One can thus obtain the impulse of the apex beat, the pulsation of the jugular vein, carotid artery and radial artery; or the respiratory curve, the impulse of the right ventricle, a pulsating liver or an hydrothorax. Its use in cases of Adams-Stokes disease in demonstrating the inco-ordination of auricles and ventricles is well known. The last named condition, however, may be present unexpectedly. In two cases in which he has had any opportunity of tracing, there was only slight dyspnea on exertion and a pulse rate of 60; the tracings showed a dropping out of ventricular beats due to depression of conductivity; the interesting question, of course, arose as to whether these were incipient cases of Adams-Stokes disease. He had further made tracings in a number of cases with anginoid symptoms referred to him by Dr. Musser. In such cases delayed conductivity, or prolongation of the period of tension, often sounded a note of warning that one had to deal with a degenerating myocardium. Often one is thus able to determine beforehand the cases which will be benefited or made worse by digitalis. In tricuspid insufficiency the type of the venous pulse confirms the diagnosis. In this connection it should be borne in mind that some authorities, among whom Gibson may be mentioned, maintain that primary tricuspid insufficiency is by no means so rare as is generally supposed. An interesting case which Dr. Norris had lately traced for Dr. Marvel showed multiple pulsations in the cervical veins and clinically seemed much like an early case of Adams-Stokes disease. The cardiosphygmograph, however, revealed the fact that the extra pulsations were ventricular in origin, due to feeble extrasystoles which failed to reach the wrist. Dr. Norris emphasized the fact that the study of the venous and arterial pulses coincidently is not merely of theoretical interest, but of great practical utility.

DR. L. C. GROSH, Toledo, Ohio, said that the endeavor of the paper is to aid in the analysis of the waves in the jugular pulse by an experimental method simulating the clinical ones used to-day. Lack of time made it impossible to present fully the clinical cases in which they attempted to demonstrate some of the applications of the jugular pulse, especially those pointing out some of the difficulties in demonstrating complete dissociation of auriculoventricular rhythm. In answer to Dr. Hirschfelder's criticism that Dr. Mackenzie misinterpreted their tracings Dr. Grosh stated that Dr. Mackenzie was confused by using the tracing taken before the jugular was dissected free from the carotid for the one after this was done.

EARLY POSTOPERATIVE INTESTINAL OBSTRUCTION.*

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Postoperative ileus, unfortunately, is one of the serious sequels of abdominal operations which all who have had an extended experience have often been called on to treat.

Among the earliest papers treating of this subject exhaustively in this country are those of such excellence from the pen of Dr. Rohé[1] in 1894 and Dr. Marcy[2] in 1896.

That intestinal obstruction is common following abdominal sections of all kinds can readily be proved by the reported statistics from various sources. There are reports of single cases by the hundreds. But there are also collected and analyzed series of cases which prove more that is needed in a discussion of our topic.

Sir Spencer Wells (Finney) in 1,000 ovariotomies reported 11 cases which he diagnosed, all dead without operation. McWilliams[3] collects a series of 86 secondary operations for postoperative obstruction from vari-

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

1. Rohé: Trans. Am. Assn. Obs. and Gyn., 1894.
2. Marcy: THE JOURNAL A. M. A., 1890.
3. McWilliams: Wash. Med. Ann., 1905.

ous sources, all occurring in the small intestine. Sixty-nine followed appendicular abscess, 59 patients recovered and 27 died. Mitchell[4] reports, from the service of Dr. Halstead, 907 appendectomies—414 chronic and 493 acute. There were 1.5 per cent. obstructions after the chronic and 6.1 per cent. following the acute cases. In abscessed cases there were 6.5 per cent. of obstructions and in those having a beginning peritonitis 11.7 per cent. More than one-half of these were early.

Finney[5] reports 26 cases in his own work at Johns Hopkins, and further says that he knows of as many more of which he has no histories which have occurred in the service of his colleagues. Of the 26, he operated on 22 patients and 16 recovered. In 20 cases the obstruction was in the small intestine, 14 were early and 12 late, and 18 were directly due to adhesions. Deaver,[6] in 1901, operated on 10 obstructions following operations for appendicitis, in all of which there was an abscess at the time of the operation. He uses these as a potent argument against delayed operation and waiting for the wall-off process to occur. Gibson[7] found in a study of 1,000 operations for postoperative ileus the small gut obstructed in 95 per cent., of which bands or velamentous adhesions produced 186. McWilliams reports one patient operated on twice for obstruction, recovered, and quotes the following from Brewer and Hotchkiss: Brewer reports one patient on whom he did three operations for obstruction, ultimate recovery. Hotchkiss reports one having two obstructions, recovered from first by operation, and died of second, unoperated on. For convenience of discussion at this time, postoperative intestinal obstruction may be divided into early and late. Also for convenience we may call those obstructions early which occur prior to the patient's discharge from convalescence by the surgeon. As this period is usually about two or three weeks, those coming on after this period we may call late.

The object of this paper is not to discuss the late cases, only the early are to receive our attention. The late cases differ only from primary obstructions in diagnosis or treatment in that they have once before been operated on, which gives added reasons to the surgeon for the earlier diagnosis of the lesion.

When we come to the consideration of the early cases we are confronted with an entirely different condition than is found in late obstructions. The earlier the obstructive symptoms develop following the operation, the more difficult and complex, ofttimes, are the symptoms on which to formulate a correct diagnosis. Failure of the patient's bowels to move, either gas or feces, by the end of the second to fourth day after operation, of itself may not be significant, but, if accompanying their failure, there are vomiting, distension, rising pulse and possibly temperature also, the scene changes. I have seen a patient following abdominal section pass eleven days before there was a fecal evacuation and six days before any gas passed, and yet at no time was there any idea of obstruction or peritonitis in the case. During this time no cathartic, or even an enema, was given. Failure of the patient's bowels to move or to pass gas after two to four days, when all ordinary means have been used to secure renewal of the normal fecal current, brings us at once to the necessity of deciding, if possible, the cause of failure. At times, following enemata and cathartics, these patients will have some small passages of gas and possibly fluid feces, brought away from the colon by the enemata, but these should never mislead us or lull us into a sense of security, for by carefully watching our patient we will be able to note no real improvement in the patient's general condition; no decrease in distension, no decrease in vomiting, no improvement in pulse, expression or general condition. An adequate movement of the bowels, with full establishment of patency of the intestinal canal, will, on the contrary, always be so evident in the improvement of the patient's pulse, expression and general condition. When a patient who has passed the active period of nausea following anesthesia, or who has had no nausea, begins to vomit on the second or third day small quantities of clear, thin, bile-stained fluid, becoming more copious and frequent, changing to dark and flaky, or possibly brownish, we may almost certainly reckon some form of obstruction will supervene in the majority of instances. The vomiting so often is not expulsive, but a sort of regurgitation or overflow from a stomach filled with fluid, although the patient may constantly complain of the sense of nausea.

There are three well-recognized forms of intraperitoneal lesions which account for these conditions. There may be a septic peritonitis, or a mechanical obstruction by adhesions or bands, or there may be an organic spasm of the bowel itself, producing this obstruction. The latter is rare, the first two being most frequent causes.

Vomiting is a symptom in both of these, and distension also, except in those rapidly progressive virulent types of septic peritonitis, where there is very little vomiting, and small amount of distension, the patient's pulse rising high, with decreasing tension, without a corresponding rise in temperature, or a drop to subnormal. The less virulent cases of septic peritonitis may have, and often do have, a corresponding increase in pulse and temperature at first, just as they do in mechanical obstruction, and when the septic process has gone farther, the temperature will not keep pace with the pulse or fall to subnormal, just as it does in mechanical obstruction. There can be no fecal vomiting in septic peritonitis as well as in mechanical block. Autopsy done on patients who had fecal vomiting has shown no mechanical obstruction to the fecal current.

There may be asymmetrical distension of the abdomen in mechanical cases, which, if recognized, is a valuable aid in helping out the diagnosis. Septic peritonitis is more liable to be the cause of obstruction in the very early cases, within the first three or four days, than is mechanical obstruction, although the latter does occur; in fact, a patient may be the subject of both forms at the same time.

In the early days after the operation there is, therefore, an unfortunate similarity of symptoms between these two widely dissimilar conditions; hence the difficulty in diagnosis, the thing which, above all others, it is necessary for the patient's welfare and the surgeon's peace of mind to attain. In septic peritonitis, peristalsis is almost invariably entirely wanting, and in this one symptom alone does it differ from mechanical block, in which case there is usually visible peristalsis. In mechanical ileus the peristalsis is accompanied by griping pains, coming on in paroxysms. If there is any difference at all in symptoms, pain, together with the ridges of distended intestine against the abdominal wall, is the more prominent and distinguishing. It seems that pain with intestinal patterns accompanying it, should always be heeded as pointing to a mechanical

4. Mitchell: Wash. Med. Ann., 1905.
5. Finney: Ann. Surg., 1906.
6. Deaver: Wis. Med. Jour., Jan., 1903.
7. Gibson: Ann. Surg., vol 32, Nos.4 and 5.

cause for its presence. Later these paroxysms decrease in severity, finally cease and are not found among the manifestations later in the history.

There is another form of obstruction due to tonic spasm of the bowel itself, producing occlusion of its lumen. These, however, are uncommon. Boise[8] has called attention to these rare cases.

Drs. Murphy,[9] Werder,[10] Blume,[11] Ashton,[12] and Baldy[13] have all reported such. This evidently is an instance of tonic contraction due to some stimulus which does not abate in time to allow the gut to resume its patency. All these patients were either operated on or opened postmortem and no peritonitis or other cause for obstruction found. There are cases on the border line, when no one can positively decide between obstructive symptoms due to mechanical or septic origin. In a personal letter to Dr. Maguire,[14] of Michigan, concerning this class of cases, Dr. Senn writes:

> The weak side of intestinal surgery to-day is the uncertainty of diagnosis; the surgeon must often shoulder the responsibility imposed on him by the status of modern aseptic surgery, of seeking light in doubtful cases by resorting to an exploratory opening and then acting in accordance with what is revealed by inspection and palpation.

Bloodgood[15] states that a rising leucocytosis is an almost constant and early accompaniment of intestinal obstruction and that, in his experience with intestinal obstruction, postoperative as well as primary, there has been a leucocytosis of from 15,000 to 30,000. But in the early cases there are other intra-abdominal conditions which may account for a leucocytosis; hence it, as a diagnostic sign, can not be depended on, as it might, in a late case when all other lesions within the abdomen to produce the leucocytosis are gone.

Indicanuria would seem to be and has been considered, for theoretical reasons, of diagnostic importance, but it also occurs with so many other abdominal and constitutional conditions that it is not diagnostic in this instance. It was positively stated by Rohé in his paper in 1894, backed up by competent authority in this country and in Europe, that indicanuria was a sure sign of intestinal obstruction.

The vomiting of obstruction frequently has been called reversed peristalsis. This explanation for the profuse vomiting is proved to be an incorrect assumption. Mall,[16] by an exhaustive series of experiments, has proved that peristalsis is always in one direction, if at all, and that nothing can induce a reverse peristalsis. The vomiting is doubtless due to several other causes, among which most important are probably toxemia, distension and compression of the distended bowels by the abdominal muscles.

F. J. Murphy, in a private communication to Dr. Finney, says:

> Artificial ileus produced in cats shows that obstruction to the venous flow produces much more prompt and serious symptoms than obstruction to the arterial supply of the gut. If the arterial supply was cut off symptoms were fairly well marked after eighteen or twenty-four hours. If the arterial supply was not cut off but the venous return was obstructed, the animal began within an hour to vomit and lose muscular tone and usually died in from twenty-four to thirty-six hours. If the abdomen was opened one-half hour after obstructing the arterial supply very little change was found in the obstructed loop, but if opened in one-half hour after obstructing the venous return the walls of the obstructed loop were found to be edematous, dusky and softened, with bloody fluid in the abdominal cavity. Microscopically there was found to be disintegration and ulceration of the mucosa.

Kocher has pointed out the same from his own observation. Mall has shown that ligation of the superior mesenteric vein will at once throw the whole intestinal tract into violent peristalsis and that ligation of the mesenteric vein will throw the portion of gut it drains into active contractions. These facts probably, in some degree, account for and explain the paroxysmal and painful contractions of mechanical ileus, which at the point of obstruction interferes with the venous return from the bowel. Mall has further shown that the anatomic arrangement of the venous return from the bowel is so guarded at its exit at the mesenteric side by strong valves that injection of the veins and capillaries of the bowel is impossible through a cut mesenteric vein. For this reason a collateral venous circulation is an anatomic impossibility, thus accounting for the intense venous congestion and peritoneal exudate at any given point of obstruction. Hence an obstruction to the return flow from the bowel at any point of obstruction at once establishes a condition of congestion, edema, exudation and transudation of bacteria, with local peritonitis, a fact well attested by the findings at secondary operations, especially in delayed cases.

These facts probably also account for the large quantities of fluid and gas vomited by the patient and found also in the distended gut above the point of obstruction, and which are from time to time crowded up into the stomach by the distension and pressure of the abdominal walls, especially during the acts of vomiting.

Mall has further shown that the active return flow from the intestine is due to peristalsis. When the bowel contracts the muscular pressure forces the blood out of the circular veins, past the valves at the mesenteric side, and when the muscular wave has passed the capillaries and veins are at once filled from the arterial side.

A quiescent bowel is, therefore, one from which the return venous flow is slow. During the stasis of acute septic peritonitis a condition is established within the intestinal tract akin to that existing during the obstruction from mechanical causes, viz., congestion of the venous tract, favoring fermentation, distension, and development of toxins within the bowel itself, thus adding to the toxemia of the peritonitis an intestinal toxemia also. Hence the similarity of the symptomatology of mechanical ileus and obstruction due to peritonitis.

Concerning the nerve arrangement in the intestinal wall, Mall says:

> When we consider that the contraction of the intestines continues independently of the central nervous system, that the walls are filled with systems of nerves which perform functions independently of even the solar plexus, we may admit that the whole intestine lives to a slight extent an independent life.

In proof of this statement he has removed the intestines, kept them on ice for twenty-four hours, then immersed them in a bath of 37 C., and established an artificial circulation through them of blood serum at 37 C. and had rhythmic contractions recur.

It is probable, therefore, that the inhibition of peristalsis in acute septic peritonitis is due directly to the poisoning of these nerve centers in the gut. Similarly, although opposite in results, Booker[17] has isolated or-

8. Boise: Trans. Am. Gyn. Soc., 1896.
9. Murphy: Jour. Am. Med. Assn., January, 1896.
10. Werder: Trans. Am. Assn. and Gyn., 1897.
11. Blume: Trans. Am. Assn. and Gyn., 1897.
12. Ashton: Jour. Am. Med. Assn., 1892.
13. Baldy: Am. Jour. Obs., 1898.
14. Maguire: Jour. Mich. Med. Soc.
15. Bloodgood: Ann. Surg., December, 1903.
16. Mall: Johns Hopkins Reports, vol. I.
17. Booker: Trans. Am. Pediatric Soc., vol. I.

ganisms from the intestine whose product, when injected into the intestinal tract, at once produces powerful contractions and pain similar to the tyrotoxicon of Vaughn. If there are toxins which can stimulate unduly in this manner there are probably those which do the opposite by their local effect on a nervous apparatus so sensitive as this, in the intestinal wall, is proved to be.

Nesbitt[18] has ligated the small gut of dogs and isolated, from the fluid above the obstruction, cholin, neurin and muscarin and other toxins. Neurin and muscarin are extremely poisonous substances, produced in larger quantities if lecithin has been present in the foods of the dog before obstruction. He has proven that lecithin is split up into these substances by bacterial action and also that cholin is changed into the same poisonous substance, neurin, by bacterial action. Injection of these toxins into small animals in small doses produces weakness, depression of the vascular system and other symptoms we have in intestinal obstructions, notably restlessness. Larger doses are fatal.

Clairmont and Ranzi (Finney) have injected infiltrates from the normal intestinal fluids into small animals with no poisonous effects. But a filtrate taken from the fluid found above the point of obstruction when injected produced toxic symptoms, and if given in sufficient doses was fatal. A filtrate from the small intestine was more toxic than one from the large intestine.

This is what we might expect, if the statement of Moynihan, in his "Abdominal Surgery," is true, that the number and virulence of the intestinal bacteria increase as we go down from the pylorus as the starting point and reaches its maximum at the ileocecal valve. From this point throughout the colon the number and virulence is much less. From the foregoing results of laboratory investigations it would seem that the mere mechanical obstruction of the bowel is only one factor in the fatal termination. A fatal termination may also result as quickly from simple obstruction of the venous flow from a loop of gut.

Reichel[19] has shown by direct experiments that simple kinking of the bowel, artificially done, is not sufficient to produce obstruction, but there must be infection and localized surrounding peritonitis at the angle. The weak, rapid pulse, the cold extremities, moist skin, the sunken eyes, anxious expression and restlessness are all the expressions of general poisoning. This all leads us to a realization of the farsighted and learned résumé which was made by Frederick Treves in his book on "Intestinal Obstruction," in which he writes:

> The final symptoms which precede death are not so much those due directly to occlusion of the lumen of the bowel as those depending on septic infection of the whole body from a disordered intestine. The subjects of acute intestinal obstruction die, for the most part, with the phenomena of septic poisoning, and if a certain stage has been passed the mere relieving of the obstruction does not save life.

Every abdominal operation should be done not only with the idea of ridding the patient of the ailments for which operation is undertaken, but also the endeavor should be to do that operation in such manner that there shall be a minimum of postoperative sequelæ of all kinds.

Abdominal surgery has advanced to such a nice point of technic in experienced hands that there ought to be a decrease of bad after-results. Of course, in the nature of some cases, it is not possible for the surgeon to accomplish the impossible, especially in the neglected or actively virulent conditions involving suppurative processes in the abdomen. But in the non-suppurative conditions these bad sequelæ ought not to be, and in a large proportion of the suppurative cases the same should be true. When we consider, however, how many untrained physicians essay to do abdominal surgery it is a wonder that the results in that quarter are as good as they are.

From a careful analysis of the large number of reported cases of intestinal obstructions following abdominal section we find that adhesions in some form, either those existing prior to operation or produced by the pathologic process present, or as a result of operation, are the principal causes of true postoperative ileus, and to the prevention of these our operative technic should be directed.

Baisch (Finney) in a series of experiments on dogs proved to his own satisfaction that the smallest possible amount of blood left in the abdomen will produce adhesions at that point. He produced the same amount of trauma to the parietal and visceral peritoneum, in one class of cases securing perfect hemostasis before closing the abdomen, and in the other series leaving some blood in the peritoneum. All those dogs were opened later, and in those in which hemostasis was perfect there were no adhesions, and in the other class all had adhesions. Baisch quotes Zweifel's results following 800 laparotomies, with only two obstructions following, many of them having extensive adhesions at the time of primary operation. Zweifel's care in securing as perfect hemostasis as is possible is well known. Perfect hemostasis is to be attained, if possible, in every operation, for other reasons, whether retained blood causes adhesions or not. There are good theoretical grounds for believing that Baisch's deductions are sound.

The endeavor should be to handle the intestines as little as possible, and never to eviscerate the patient partially or totally, unless absolutely impossible to prevent it. The use of large, flat gauze sponges or towels to isolate the intestines from the field of operation is desirable. These will irritate the delicate surface of the peritoneum less if they be wrung out of warm sterile normal salt solution before use. By their use the intestines are secure against exposure to the air or friction, they are kept away from the field of operation and all possibility of infection, if the case be an infected one. To use the sponges with the more satisfactory results the incision should be long and the patient be in a moderate Trendelenburg position, for, by the thoroughness and ease of their use are the results desired to be attained.

Unnecessary tearing of peritoneum in separating adhesions is to be avoided, and unnecessary spreading of pus, if present, can be avoided by aspiration if it is enclosed, or by rapid sponging if free. Moist gauze sponges wrung out as dry as possible absorb both blood and pus better than if they are dry. All denuded points of peritoneum should be covered if possible, especially should the stumps of broad ligaments, tumors, etc., be entirely covered over with peritoneum. In pelvic surgery so many times has it been observed how the sigmoid covers so much of the diseased area, by the adhesions which it has formed on its anterior aspect and that of its mesentery, yet no obstructive symptoms follow. We can utilize this fact in preventing adhesions of small intestines to denuded places in the pelvis, by bringing the sigmoid forward and, if necessary to hold it, by stitching it there.

18. Nesbitt: Jour. Experimental Medicine, 1899.
19. Reichel: Deutsche zeit. f. Chirurgie, Bd. xxxv.

The reports show that 95 per cent. of obstructions occur in the small intestines. It is, therefore, the small bowel which we should aim to keep from these dangerous, denuded spots. After putting the sigmoid forward, then, if the omentum be brought down and its free edge tucked in front of the sigmoid, the small intestines remain without the danger zone. Corner, in St. Thomas' Hospital Reports for the years 1900 to 1902 inclusive, states that in that institution there have been more intestinal obstructions following vaginal hysterectomy than from all other pelvic operations. Olshausen has reported one obstruction and so has Marcy one, following vaginal hysterectomy.

I feel that this report from St. Thomas is not in accord with the weight of experience. *Apropos,* it may be remembered by those doing vaginal operations that the sigmoid with its appendices epiploicæ, almost invariably, is the only gut that is seen through the vagina. If it is not disturbed by the operator or pushed back by too much packing the small bowel will almost never get into dangerous position. The sigmoid in this operation should designedly be utilized to cover the vaginal opening, if gauze packing be used, and not so large a pack should be used as to displace the sigmoid and allow knuckles of small gut to come down against the gauze and form dangerous adhesions.

In the use of drainage, intra-abdominal, there is another source of adhesions and danger of obstructions. In pelvic operations in women all drainage can best be done through the vagina, where the gauze can be covered by the sigmoid and omentum. Elsewhere in the abdomen the lateral wall of the peritoneal cavity should be utilized whenever possible as one side of the drainage tract. It is doubtful if any gauze drain should be placed in contact with small intestines, unless it is covered by some protective substance such as rubber tissue. The so-called cigarette drain fills all indications and demands of a drain. As Coffee[20] has shown in a most exhaustive article on drainage, it is the area of the cross-section of the drain at the point where it passes out of the abdomen which determines the amount of fluid it will carry away, and also that the outer end of the gauze shall be in contact with gauze dressings so that the capillary pull may be continuous. It is not necessary, therefore, that there should be a large fan of gauze spread out at the bottom of the drain to make adhesions which, when the drain is removed, may pull a loop of gut into a dangerous position and produce obstruction. At any and all points in the abdomen the omentum may be utilized to separate intestines from drains which are left in. If necessary stitch the omentum where you want it to remain. Nature in her processes uses it freely, glueing it in all sorts of places and positions in her attempts at conservation of the life of the individual. The omentum should in all places possible be interposed between the small bowel and the abdominal incision. Avoid drainage when possible, for it always carries a hidden danger, but use it if judgment dictates, and use it so as to minimize its dangers. It is doubtful if aristol or any other powder applied to denuded surfaces will prevent adhesions, or that Cargyle membrane is any more efficacious.

It has been advised in the past that all adhesions should be broken up between coils of bowel during the course of an operation. If the adhesions are old separation will produce other points for adhesions, but in different location than before. If no symptoms of obstruction existed before operation it is questionable if it is wise to substitute an uncertainty for a certainty—for the new arrangement of adhesions may not be so favorable as were the old. This has once happened in my experience with disastrous results.

Whenever there is an active septic process within the abdomen at the time of operation in that class of cases we are most apt to have adhesions and postoperative ileus. This is abundantly proved by the statistics after acute appendicitis operations. Halstead had 1.5 per cent. after chronic cases, 6.5 per cent. following abscess cases, and 11.7 per cent. following cases of associated peritonitis. In all but the chronic cases, of course, drainage was used. Sixteen of Finney's patients were drained and ten were not drained at the primary operation.

The consensus of opinion among the large majority of experienced abdominal surgeons is to the effect that too early and too strenuous efforts should not be made in an attempt to move the bowels after operation. The whole nervous apparatus of the abdomen has suffered a shock at operation. Physiologic rest is what it needs for a period, to restore nervous tone and normal innervation of the parts. Instead of stimulation by cathartics, rest is indicated. Enemata to stimulate the lower bowel to pass gas which it contains, simply to add to the patient's comfort after the first day, are not contraindicated. It would seem that because of the unpleasant after-effects of morphin a great many operators allow their patients to have no anodyne of any sort after operation. Suffer yourself the agony of excruciating abdominal pain for two or three days and then answer if your nervous system will have been benefited thereby, and if co-ordination and equilibrium of the general and sympathetic nervous systems will have been secured.

These patients, as a rule, need and should have an anodyne, and of all the anodynes, codein phosphate in doses of from 1 to 1½ grains hypodermatically, will quiet the pain the best, produce no nausea, no intestinal distension and will not in any way interfere with peristalsis. It should be used in only sufficient dosage and frequency to give the patients relief from the acuteness of their suffering. The general improvement in the nervous condition of a person thus relieved will stand out in strong contrast with one who is racked with pain, at the end of forty-eight hours.

This is along the same line with withholding cathartics, the object being to get the nervous apparatus and bowel in shape to begin function again. By following the combined plan the majority of patients who have not within their abdomen the causes which will inevitably produce obstruction, will pass a much less stormy convalescence and the surgeon himself will be saved a deal of worry and anxiety.

Those who are going wrong by nature of what is inside of them will soon show the tendency. Overcatharsis is detrimental and should not be followed when it is either all vomited or produces no results. If not beneficial it may be and probably is harmful. Atropin, eserin and physostigmin in large doses have not done what was hoped for, from the enthusiastic reports of their efficacy when first tried. Enemata may be persisted in as less harmful. If the obstruction be in the colon, distension with water, raising the hips during administration, may relieve the obstruction. Change of position is advisable, from side to side, over to the front or a partial sitting posture also. Massage of the abdomen has given good results in some cases of mechanical

20. Coffee: THE JOURNAL A. M. A., March 16, 1907.

obstruction. Byron Robinson[21] has described an obstruction, with distension of the duodenum and stomach, the direct result of occlusion of the duodenum at the point where its horizontal portion passes beneath the superior mesenteric artery, vein and nerve. This obstruction is best relieved by posture and the use of the stomach tube. Too much delay in coming to a realization of the inadequacy of palliative treatment of obstruction cases is detrimental to the safety of the patient. Operation, and that early, is the watchword, and yet how few are operated on as early as they ought to be. It appals the operator and, much more, the patient and family, when it is announced three or four days after the first operation that there must be another immediately in order to save the patient's life. The surgeon, recognizing the frightful percentage of mortality at this time, so soon after the shock and trials of the first operation, together with the toxemia and absence of nutriment over a period of three or four days, knows that the condition puts the patient in great jeopardy. It requires a sturdy man to face the ordeal early. The largest mortality is in the immediate cases, within three or four days, partly from the causes given and partly because septic peritonitis enters as a factor into them, whereas those coming on a week to three weeks after operation are devoid of this dangerous complication.

There is a class of cases occurring generally within three weeks, the patient's bowels having moved well, or possibly tardily—not entirely satisfactorily, yet who have done fairly well. Suddenly vomiting will begin, and usually is ascribed to some fault in digestion or some error in diet. Rest to the stomach with cathartics and enemata may secure comparatively good results and the patient appear better, then symptoms will recur. Beginning obstruction is invariably indicated and operation should be done at once. As Peck[22] has so truly said, so many subjects have adhesions which are in position to produce obstruction but which never show their presence till the patient gets an attack of indigestion with gaseous distension of the bowel, a kink, venous congestion and then the train of symptoms diagnostic of obstruction.

In the patient's best interests it is better to operate in a case of septic peritonitis causing obstruction, rather than not to operate on a case which may prove to be mechanical obstruction. It may be an open question, if the treatment of septic peritonitis in the near future will not be free drainage of the distended gut, with postoperative lavage of the same, and also free drainage of the peritoneum.

No doubt many of my hearers have had the following experience: Called to a patient with well-defined symptoms of obstruction; opened the abdomen and found just a band of some kind which, when cut or removed, relieved the obstruction. The wound was closed with every confidence on the operator's part that the patient would get well, but death occurred in one or two days. Why? Because the toxins contained in the fluid above the obstruction passed down into an empty, healthy absorbing gut below and simply killed the patient by the lethal dose, but the obstruction was removed. If there has any one error been made in a part of the cases operated on for postoperative as well as for other obstructions, it is in freeing the obstruction and allowing the poison-loaded contents to pass on. Theoretically and practically those patients are most liable to recover whose bowel is opened above the point of obstruction and relieved of its load of poison, which is best done by the method described by Moynihan in his book on "Abdominal Surgery." The value of the procedure is evident in the brilliant results reported by many surgeons today, who in extreme cases have brought a knuckle of gut, the first distended knuckle presenting on entering the abdomen, into the wound, opening it, draining it of its poisonous contents and holding it in position, later using lavage into both afferent and efferent loops. Many of these patients *in extremis*, have recovered by this simple operation, requiring only a few moments' time and cocain anesthesia only for its accomplishment.

Finney and Pancoast[23] have reported several interesting cases of this kind, in which after operation the patient has been given food, cathartics and other medication directly into the bowel through the fistula.

What is to be done and how, must be decided in each individual case at the time of the operation, dependent on the conditions found and much more on the condition of the patient and his or her ability to undergo a prolonged or short operation.

The vital question is to decide how best to save life, whether to drain the bowel and close the opening, then free the obstruction, or to resect, or do an anastomosis, or do the simplest of all, make an enterostomy.

There can be little doubt that the operation of the future, when such patients are *in extremis* will be to do an enterostomy at the most prominent point of distension, or to one side of the original incision, rather than through the original incision, because several dangers can be so avoided and time saved. Later the fistula may be closed and the obstruction removed. Finney did enterostomy in nine out of his twenty-two secondary operations; Deaver recommends large doses of salines to be given through the stomach tube as soon as these patients are out of their anesthetic. In a personal communication Dr. Mitchell states that he has in at least twenty cases, immediately after operation, washed out the patient's stomach and left in the stomach from six to ten ounces of castor oil, which has invariably passed through freely within twelve to twenty-four hours. This is certainly a rapid and effective method of ridding the whole intestinal tract of the poisonous load.

The discriminating watchfulness of his patient by the surgeon during the early days following operation, the prompt recognition of evidences of obstruction if it occurs, the still prompter secondary operation to relieve it when it is known to exist, using discretion as to what is done and how it is done, are only a few of the burdens which that surgeon shoulders in piloting his patient through the trying ordeal of an abdominal operation.

21. Robinson: Cin. Lancet Clinic, December, 1900.
22. Peck: Ann. Surg., 1904.
23. Finney and Pancoast: American Medicine, 1903.

Bronchiectasis.—Richard and Gurd in the *Montreal Medical Journal*, state that clinically the course of this disease is in many respects the same as the ordinary form of pulmonary tuberculosis. There is usually a large amount of more or less foul-smelling sputum, hemoptysis is not uncommon, there may be a history of chills and sweats with progressive emaciation and weakness. The physical findings are those of acute bronchitis with cavity formation and consolidation. Repeated examination of the sputum will usually reveal the absence of tubercle bacilli and the presence, in comparatively large numbers, of a very small Gram-negative bacillus which on cultivation will be found to be the *Bacillus influenzæ*. Blood from patients suffering from this infection will produce an agglutination reaction similar to that commonly made use of in the diagnosis of typhoid.

THE PREVENTION AND TREATMENT OF POSTOPERATIVE INTESTINAL OBSTRUCTION.*

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In three previous papers[1] I have reported the results in the study of this subject, and I am led to speak of it again at this time not alone because my continued study of the subject convinces me of its soundness and great value, which view is shared by many who have employed my suggestions, but more especially because I desire to benefit by the discussion of this matter by the great field embraced only in the membership of this organization. To review the action of eserin salicylate on the intestine I shall quote from my first paper:

To prevent any occurrence it must first be thoroughly understood. It was, therefore, first necessary to understand how and why celiotomy produced paresis. This question is entirely elucidated by the peculiar anatomy and physiology of the intestine. With both the anatomy and physiology of the intestine every one here is familiar in a general way, and assuming this I shall only intrude on your time those facts not so generally known.

Anatomically we have to do with the longitudinal and circular coats of unstriped muscles with Auerbach's plexus of nerves between them and Meissner's plexus inside the circular coat. The unique effects produced on the intestine by its exposure to the irritation accruing from the lowered temperature and manipulations incident to celiotomy are largely owing to this peculiar nervous anatomy. The intestines, while unquestionably influenced both as to motor and vasomotor conditions by the central nervous system, through the splanchnics and vagi, are none the less essentially autonomous. It has many times been experimentally demonstrated that the ganglia comprised in Auerbach's and Meissner's plexuses are fully capable of complete reflex functions, so that perfectly normal motor equilibrium is easily and permanently maintained after complete severance of every slightest connection with the central nervous system. However, it is probable that in the human celiotomy patient we are dealing with a much more complex problem than in animals under experimentation, for it seems probable that the chilling and contact irritation cause an excitation of the splanchnics, which creates powerful reflex spinal inhibitory impulses while it at the same time produces a degree of over-stimulation of the intrinsic reflex ganglia which results in speedy exhaustion.

Bayliss and Starling,[2] who have very recently thoroughly investigated this subject, say: "The tendency of physiologists during the last thirty years has been to deny to peripheral ganglia or collections of ganglia any reflex function at all comparable to those possessed by the brain and spinal cord functions, that is to say, which include co-ordination as well as mere reflexion of impulses. The facts we have brought forward, however, show beyond doubt that the local nervous structures in the gut have this power of co-ordination, of directing one kind of influence along one path and another kind of influence along another path, the results being a 'purposive' response directed to the propulsion of the food down along the alimentary canal. Auerbach's plexus is, in fact, a local nervous system with two reflexes, inhibition and augmentation, and one function, the propulsion of food." The two reflexes, acting in cooperation, give rise to the phenomena which constitutes the basis of what is known as "The Law of the Intestine," namely, "If cerebrospinal reflexes be excluded, excitation at any point of the gut excites contraction above and inhibition below." In normal human beings under operation, however, the splanchnics and vagi are still operative, except in so far as they may be affected by air, temperature, trauma and anesthetic, and the problem is, therefore, less simple. The most marked influence exerted by the central nervous system through these nerves seems to be limited to the control of the vasomotor influences and the more distinct control of the ends of the alimentary canal, as, for example, swallowing and defecation. Courtard and Guyon[3] say, however, that contraction and dilatation of the two muscular coats determined by stimulation of the splanchnics are entirely independent of any vasomotor influence, being the same whether the vagus is cut or its peripheral end stimulated. Moreover, according to Bayliss and Starling,[2] the splanchnics are bearers of tonic inhibitory influences to the intestine. "These inhibitory impulses are reinforced by reflex inhibitory influences dependent on stimulation of the sensory nerves." This last sentence, taken in conjunction with the following quotation from the same authors, namely, "The most striking method of producing reflex inhibition is stimulation of the intestine itself. If one or both splanchnics be intact the slightest stimulus applied to the intestine, even a gentle handling of the gut, suffices to produce a reflex inhibition of the whole length of the intestine," shows quite clearly how intestinal paresis may result from the most simple exploratory celiotomy in the hands of the most expert. Mall,[4] moreover shows that this inhibitory influence of the splanchnics is superfluous, as the contraction of the intestine continues independently of the central nervous system; the walls are filled with systems of nerves which, no doubt, perform functions independent of even the solar plexus. "We may admit that the whole intestine lives, to a slight extent, quite an independent life."

The foregoing shows quite abundant cause for paresis and yet it is possible that there are still further causes active during celiotomy, for Dastre and Morat[5] say that asphyxia causes intestinal anemia (hence lessened intestinal activity) and restoration of oxygen produces the inverse effect. Therefore, it is quite possible that a prolonged or too profound anesthesia may play a certain rôle in intestinal paresis. There, too, Mall[4] has shown that peristalsis is more active after a meal and at rest during the night, therefore the preoperative cleansing of the intestinal canal favors paresis by removing the natural stimulus of intestinal contents. Various investigators have proved that when normal muscular action may be prevented in localized areas of the intestine, whether it be as spasm or as relaxation, or both in different areas, nothing so quickly re-establishes the normal rhythm of both the pendulum (Cannon's rhythmic segmentation) and propulsive mechanisms as the establishment of the normal peristaltic wave in the normal portion of the gut. Under this influence the spasm will relax and the dilated bowel contract.

One further point only. Postoperative intestinal paresis is probably due to a dual influence. Inhibition due to a stimulation of the splanchnic fibers and exhaustion due to over-stimulation and hence fatigue of the ganglia in Auerbach's and Meissner's plexuses. To regulate peristalsis we must then counteract the stimulated spinal reflexes acting through the splanchnics and restore the energy to the intestinal nerve ending and muscles. In a word, this constituted my problem.

As detailed in my original paper, many months spent in painstaking trials showed that by means of eserin salicylate these results could be achieved. To show how it accomplishes this purpose permit me again to quote this time Professor Wood.[6] He says:[7]

It has no apparent local irritant action in therapeutic doses. Absorption and elimination are rapid, the latter principally by the kidneys. No sensible general effects are perceptible after full therapeutic doses of calabar bean, except it be slight weakness and dislike for muscular exertion. The physiologic

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

1. The Prevention of Postoperative Intestinal Paresis and Adhesions, Am. Jour. of Obs., April, 1904. Postoperative Intestinal Paresis. A Further Contribution to Its Prevention. Am. Jour. of Obs., September, 1904. The After-Treatment of Abdominal Sections with Eserin Salicylate. N. Y. Med. Jour., March 18, 1905.
2. Bayliss and Starling: The Movements and Innervation of the Small Intestine, Am. Jour. of Physiology, xxiv, 99.
3. Courtard and Guyon: Archives de Physiologie, 1897.
4. Mall: Johns Hopkins Hosp. Reports, I, 37, 1896.
5. Dastre and Morat: Archives de Physiologie, 1882 to 1884.
6. H. C. Wood: Therapeutics, Eleventh Ed., 223.
7. The italics are mine.

action of calabar bean has suggested its use in spasmodic affections, *in atony of the muscular coats of the bowel*, and in various diseases of the eye. *In constipation dependent on muscular relaxation and as an addition to laxative pills we have found it very useful.* A Hiller strongly indorses the value of the extract in chronic *intestinal atony*, after or during a catarrh, and in the convalescence from fever, etc., and in *constipation with flatulence, in meteorism*,[7] etc. One-thirtieth of a grain of either alkaloid may be considered to be the full therapeutic dose. Intestinal peristalsis is primarily much increased by the action of calabar bean. After poisoning there is first a stage of exceedingly active movements in the bowels; then spasmodic, tetanic contractions of the intestine occur so that the caliber is very much diminished and finally relaxation and dilatation take place. After death the vermicular movements are found very much lessened or altogether abolished. The action of calabar bean on the intestine appears to be peripheral, due to the contact of the poison in the blood with the muscle fibers or the nerve elements in the walls of the bowel, for Westermann found that extirpation of the cardiac ganglia had no effect on the action of the drug, but that tying the mesenteric and celiac arteries, before poisoning, prevented any increase in peristalsis. Probably there is an increase of the intestinal secretions

Owing to its sedative effects on the spinal reflexes Wood classifies it with spinal motor-depressants.

On reviewing these qualifications it is readily seen that eserin salicylate meets all demands. Its routine employment by myself, and latterly by many others, in all cases where not contraindicated or where not omitted for purposes of comparative observation, has demonstrated its absolute harmlessness, even in children. Owing to its depresso-motor action it is able to counteract the spinal inhibitory impulses carried to the intestine by the irritated splanchnics. Also acting directly to sustain and stimulate the intrinsic intestinal musculature or its nerve supply it combats or overcomes this source of paresis.

Continued employment of this drug with a wide study of its literature, especially the work being done by Oppenheim, von Noorden and others in its use as a treatment of intestinal paresis already established, together with personal experience in such employment of eserin on established cases of postoperative intestinal paresis seen in consultation, has led me to formulate original ideas on the entire subject of postoperative intestinal obstruction, which I hereby submit.

Be it understood, however, that under the caption of postoperative I include only such cases as are directly influenced by the recentness of the operation, thus being rendered quite an independent problem in etiology, diagnosis, prognosis and treatment. Cases of postoperative intestinal obstruction occurring so long after operation as to require no unusual treatment and to offer no unusual problems in diagnosis are postoperative only in an etiologic sense.

The etiology of postoperative intestinal obstruction in accordance with the foregoing limitations must be very recent and the inception of the complication must occur under the watchful care of surgeon and nurse. Preexisting and ordinary etiologic factors, such as bands, diverticulæ, hernial orifices, etc., can ordinarily be positively eliminated owing to the surgeon's recent and exact knowledge of the conditions within the abdomen and pelvis. The factors to be considered are then reduced, with few exceptions, to paresis, volvulus, thrombosis of the intestinal vessels, adhesions in conjunction with kinks, and slight local infection.

Boise,[8] under organic causes, discusses adhesions existing prior to operation and unrelieved by the operation. These cases deserve consideration as such only when it can be clearly shown that the operation was the immediate determining factor in causing those bands to produce obstruction at that particular time or when the obstruction shall supervene so closely on the operation that a secondary operation for its relief carries an unusual degree of danger because of the recentness of the original operation. The other causes enumerated by Boise are: (1) A tonic intestinal spasm; (2) true intestinal paralysis; (3) formation of new adhesions. Regarding spasm he says: "After nearly all abdominal operations, even of moderate severity, there is transient obstruction, the evidence of which is intra-abdominal pain, more or less spasmodic in its nature and generally referred to a point at or near the seat of greatest violence." This symptom complex he attributes to exaggerated (or even spasmodic) peristaltic action. My own ideas will be brought out later.

True intestinal paresis and its method of origin have been so fully treated by myself in earlier papers and by many authoritative physiologists that it requires no special elucidation here.

Volvulus, aside from its peculiar postoperative relationship, is, of course, generally confined to the sigmoid flexure and is fully understood. After the manipulation of the intestinal coils incident to a celiotomy a volvulus is possible in the small intestine as well and especially in connection with recent adhesions, as will be shown later.

A subject not so extensively known is that of postoperative intestinal obstruction due to thrombosis of the intestinal vessels. Marsh[9] has shown that direct injury may give rise to occlusion of the mesenteric artery, and Nothnagel[10] (page 280) quotes him to agree with his statements. Oppolzer, Faber and Kaufmann have reported cases in which thrombotic occlusion of the trunk of the superior mesenteric artery involved the entire small intestine (with the exception of the middle and upper horizontal portion of the duodenum) and in addition the cecum and ascending and transverse colon. When lesser vessels become occluded a continuous segment of the intestine suffers most commonly in the lower jejunum or ileum, although, of course, any part of the intestine may be involved, corresponding necessarily with the distribution of the occluded vessel. While the mesenteric arteries are not anatomically terminal arteries in action during life, the experiments of Litten and Faber show the superior mesenteric to act like one in regard to hemorrhagic infarction after occlusion.

After such experimental occlusion of the superior mesenteric artery Welch[11] and Mall[12] found first tonic contraction and anemia for two to three hours; then relaxation and venous hyperemia followed by hemorrhagic infarction in from three to six hours. Litten and Faber believe that the inferior mesenteric artery is terminal neither anatomically nor functionally.

Perhaps this is the proper place to consider the fact which Nothnagel[10] (p. 292) brings out, namely, that the circulation of dyspneic blood through the intestine may produce fairly active peristaltic movements. On the other hand, under certain circumstances, dyspneic blood has been known to have the reverse effect—inhibiting intestinal movements. But more important than the direct effect of dyspneic blood on the bowel wall is

8. Eugene Boise: Post-Operative Intestinal Obstruction, Med. News, July 18, 1896.

9. Marsh: Brit. Med. Jour., 1902, i, 694.
10. Nothnagel: Dis. of the Intestines and Peritoneum.
11. Welch: Allbutt's System of Med., vol. ii, 1899.
12. Mall, Johns Hopkins Hosp. Reports, vol. i, 1889.

the result of poor blood supply, e. g., in heart disease or portal obstruction, on the nerve supply, especially the intrinsic ganglia. Etiologically this suggests that postoperative intestinal paresis may be more commonly expected in cases in which Auerbach's and Meissner's plexuses have long been poorly nourished, as they would be more than ordinarily affected by the operation and the dyspneic blood of anesthesia.

Leichtenstern[13] has shown that decided flexions and abnormal positions of the intestines, such as commonly must obtain after celiotomies, especially where gauze packings and partitionings have been employed, need not necessarily interfere with the passage of their contents, provided only there are no adhesions causing kinks in the canal; therefore, such flexions and abnormal positions can only cause postoperative intestinal obstruction when allowed to persist until the adhesions have formed.

Nothnagel[10] (p. 475) describes the causation of postoperative intestinal obstruction by recent (new) adhesion glueing together the adjacent sides of a looped intestine throughout their entire contiguity and thus producing a sharp angulation. On the other hand, where two portions of a large loop become attached to each other at a single point no obstruction may be directly resultant but volvulus becomes extremely easy, especially in the sigmoid.

Nothnagel, in closing his discussion on this subject, says:

> The form of peritonitis leading to these intestinal adhesions is usually produced by some surgical operation, for instance, herniotomy or ovariotomy. In other cases the peritonitis is not traumatic but merely remains localized.

Albrecht,[14] Rokitansky,[15] Kundrat,[16] Schnitzler[17] and very recently Finney[18] have called attention to compression of the duodeno-jejunal junction by the mesenteric border or more particularly by the superior mesenteric artery when the small intestine is drawn or gravitates into or toward the pelvis sufficiently far to put traction on this artery. This may be considered an etiologic factor after operation for Cesarean section, ovariotomy or the removal of other large tumors which had caused overstretching of the abdominal walls, and especially in the use of the Fowler posture in septic cases, but in all instances seems easily avoidable as a postoperative complication. Albrecht[14] attributes this descent in some cases to the downward pressure of a distended stomach, but should be considered inexcusable when so readily prevented by gastric lavage.

Another etiologic factor mentioned by Nothnagel (pp. 544, 545) is omental cords, the only requisite being the adherence of a given point on the omentum to some relatively fixed point. This constitutes a powerful argument against stitching the omentum to cover raw surfaces and shows the necessity for the prevention of unnecessary adhesions in general.

The diagnosis of postoperative intestinal obstruction within the first few days resolves itself practically into the differentiation between mechanical obstruction, paresis, septic peritonitis and shock.

In the very early stages differentiation is probably always impossible, and even if the presence of leucocytosis always indicates peritonitis, any two or three or all of these four conditions may coexist. Therefore, while our intimate and recent knowledge of intra-abdominal conditions enables us to eliminate an acute exacerbation of all forms of chronic occlusion, all neoplasms, diverticulæ, etc., the ordinary postoperative phenomena render the diagnosis still more than ordinarily difficult.

Potain[19] has called attention to the fact that if the abdomen collapses during expiration it is because the diaphragm is immovably fixed and the respiration entirely thoracic, and so indicates peritonitis rather than intestinal obstruction unless, of course, in the later stages, when they coexist. But in our observation of respiratory phenomena we must always include frequent and thorough examinations of the thoracic viscera, as the diagnosis of peritonitis and even of obstruction has been made in cases of pleurisy and pneumonia.

The employment of air distension of the lower bowel for diagnosis of obstruction is either contraindicated or rendered valueless by the concomitant conditions within the first few days after a celiotomy and should very rarely, if ever, be employed.

The differentiation of intestinal obstruction and peritonitis are difficult only in the early stages, but after a celiotomy this is the very time when a quick and correct decision is necessary to save life. The etiologic factors of both conditions—for, of course, the paresis is the most common form observed—have recently been active. Even the most careful surgeon can never be certain that his asepsis, never absolute, has been sufficient. Then since this differentiation is so difficult, why not eliminate, if possible, the element of paresis?

Vomiting comes on earlier in peritonitis than in intestinal obstruction, but vomiting loses its distinctive value as a symptom of either in a recently anesthetized patient.

Visible peristalsis can scarcely be expected to aid us, inasmuch as it is usually a symptom of an acute obstruction following a long-standing chronic stenosis and, moreover, the abdominal dressings, wound, etc., render it difficult of observation even if present.

The character and location of pain are of little diagnostic value as ordinarily observed immediately after celiotomy, as practically every such abdomen in which neither peritonitis nor obstruction assumes importance as complications is the seat of much pain.

Persistently localized pain in the region of the sigmoid should, of course, warn us of a possible volvulus at that point. But as such volvulus is very early accompanied by peritonitis, the characteristic localization is very early lost.

In thrombosis of the mesenteric vessels it is entirely possible for the patient to have passed the contraction stage and to have reached the period of relaxation, which could never be differentiated from intestinal paresis before recovering from the anesthetic. That this statement is not overestimating the possibilities of rapid advance of this condition I would quote Nothnagel (p. 287), who says that death may occur in from twenty-four to forty-eight hours. Mayland[20] has reported a personally observed case of postoperative thrombosis of the mesenteric vessels.

Regarding Boise's contention that a majority of the symptoms of postoperative intestinal obstruction are

13. Leichtenstern: Verengerungen, Verschliessungen und Lageveranderungen des Darms, v. Ziemssen's Handb. d. Spec. Path. u. Therap., 1878, ii, 2nd half.
14. Albrecht: Ueber arterio-mesenterialen Darmverschluss an d. Duodeno-Jejunalgrenze, Virchow's Archiv., clvi.
15. Rokitansky: Ueber Darmschnürungen, Oesterreichische Med. Jahrb., 1836, x.
16. Kundrat: Ueber eine Seltene Form d. inneren Incarcerationen, Wien. med. Wochschr., 1891.
17. Schnitzler: Tur. Symptomatologie d. Darmsarterienverschluss, Wien. med. Wochschr. 1901, Nos. 11, 12.
18. Finney: Boston Med. and Surg. Jour., 1906-7.
19. Potain: Circumscribed Subdiaphragmatic Peritonitis, Int. Clinics, iii, 41, October, 1895.
20. Mayland: Brit. Med. Jour., 1901, vol. ii, p. 1454.

due to intestinal spasm, I must say that I can not interpret the data so as to agree with his deductions nor does my personal observation tend to this view. Quite the contrary.

If the intestinal spasm were extensive a retracted abdominal wall should be found. Yet such has never been reported. Dr. Murphy's case of lead poisoning seems to me out of the reckoning.

Localized spasm involving only a relatively small portion of the bowel could be diagnosed only by the colicky pain, and since the publication of Dr. Boise's paper I have carefully observed cases in which no special preventive treatment was instituted and have failed to find any such pain, and, moreover, in listening to the intestinal sounds as practiced by Cannon[21] in his study of the intestinal movements, absolute silence has been invariable.

Dr. Boise adduces much to support his contention from the writings of authoritative physiologists, while in my earlier papers I have extensively quoted the same authors to prove the exact opposite. In what I shall call untreated cases, bearing reference only to suggestions which I wish to submit later, I have found the pain steady, hard, greatest at and about the site of greatest trauma, increased by movement, respiration and pressure, but not spontaneously exacerbated in a way to suggest enterospasm.[22]

The subject of differentiation might be elaborated so as to constitute alone a paper many times the proper length of such a paper as this, but I feel that even without the foregoing hints everyone realizes that this differentiation within the first few days after a celiotomy is always extremely difficult and often impossible, and agrees that any harmless measure which shall serve to render such differentiation unnecessary or at least easier should be employed.

The question of postoperative adhesions has been frequently discussed, and after the work of such men as Martin, Morris and others no apology nor defense is needed for the suggestion of a method for their prevention or destruction.

In my earlier papers my suggestion was that in cases not demanding, from the nature of the work done, complete intestinal rest a hypodermic injection of atropin sulphate should precede the administration of the anesthetic, and that on the operating table, as soon as it could be determined that it was not contraindicated, as above, often only two to five minutes after the opening of the peritoneal cavity, a hypodermic injection of eserin salicylate in fresh solution be administered.

This lessens spinal reflex inhibition of peristalsis in which it is aided by the previously administered atropin. It sustains, by its action directly on the intestinal musculature, or the nerve terminations therein, the autonomous action of Auerbach's and Meissner's plexuses and prevents the transitory postoperative intestinal paresis commonly observed in patients not so treated.[23]

Constant employment of this method for six years leaves me more enthusiastic in its advocacy than at the beginning, and the statements which follow are based on this observation.

Two arguments have been adduced against this employment of eserin. My friend, Dr. Stone,[24] takes the ground that fatal intestinal paresis is too uncommon to necessitate its prophylaxis in every case. In a measure this is true, but when such a case occurs the surgeon's absolute impotence is too well known to need emphasis. Moreover, the prevention of the minor degree of postoperative paresis adds more to her comfort than many so much discussed doses of morphia. The other argument is that it prevents adhesions and thus diffuses septic material. Certainly no intelligent surgeon would employ it in a case in which a septic focus had been unavoidably left behind any more than he would in an intestinal resection. Such adhesions are conservative and invaluable, but nevertheless, as Reichel[25] claims, so I believe that in every celiotomy a peritoneal infection too slight to demonstrate occurs and from this infection proceed peritonitis, intestinal paresis and adhesions. But these adhesions are pathology pure and simple, neither defensive nor in any way salutary, and should be prevented, not to mention adhesions resulting from purely mechanical peritoneal irritation, raw surfaces, etc.

To recur once and finally to the question of enterospasm. Granting that my deductions may be incorrect and that enterospasm actually exists, physiologists show why and my cases show that the prophylactic use of eserin certainly relieves it. Various physiologists have proved that nothing so rapidly overcomes either a localized spasm or a localized area of paresis as an advancing peristaltic wave, and such waves eserin excites. This is borne out clinically by the fact that in cases in which eserin is used symptoms which Boise attributes to spasm do not appear.

The pain commonly observed after abdominal section I attribute first to trauma and secondly to the stretching of the peritoneal bowel investment by the gaseous distension of the bowel at a time when this peritoneal coat is abnormally sensitive.

The pain, perhaps more properly termed sensitiveness to pressure and bodily movements, due to trauma is comparatively slight and transitory and, needless to remark, is not influenced by eserin.

This brings us to the consideration of meteorism. Our first concern should be to learn why the paretic intestine becomes thus distended with gas. Nothnagel (p. 72) says: "Under normal physiologic conditions all the different movements of the intestine hitherto enumerated are caused solely by the irritating effect of its contents, whether chyme, feces or gas." Many physiologists have proved the correctness of this statement.

However, in the preparation of patients for celiotomy the strictly limited diet, together with cathartics, removes the material for a chyme bolus, and thus patients are denied this stimulus to peristalsis. In the administration of salines we see the exemplification of the use of the liquid bolus, but, as I have pointed out, this has decided disadvantages. But in those cases in which the intestine has been practically emptied and in which salines have not been administered, peristalsis is urgently required and Nature makes an effort to supply the only remaining bolus possible, namely, gas. This, of course, is rendered the more easy owing to the stagnation resultant on the abeyance of peristalsis. Therefore, in the

21. Cannon: Auscultation of the Rhythmic Sounds Produced by the Stomach and Intestines, Am. Jour. of Physiol., Oct. 2, 1905, xiv, 339.

22. It seems worthy of note that in so exhaustive a work, replete with editorial and translator's notes, as Stengel's translation of Rolleston's edition of Nothnagel's "Diseases of the Intestines and Peritoneum," in a very full discussion of the subjects of "Colic" and "Enterospasnim" no mention is made of laparotomy or exposure of the intestine as an etiologic factor of enterospasm.

23. I would respectfully refer those who do not care to accept this apparently arbitrary statement to the arguments fully adduced in my earlier papers.

24. Stone, I. S.: Abuse of Purgation Before and After Operation. Trans. Southern Surg. and Gyn. Asso., xvii, 64.

25. Reichel: Zur Pathologie des Ileus u. Pseudoileus. Sitzungsber. d. Würzburger Med. Gesell. 1892. No. 7.

light of the foregoing and fortified by circumstances later to be mentioned, I have come to look on this gaseous distension as conservative up to a certain point. It is only when the plexuses of Auerbach and Meissner have become exhausted or the reflex inhibition of the splanchnics is greater than ordinary that such gaseous bolus fails to restore peristalsis. But it is in the borderline cases that our interference is most needed, because when the gas distension passes a certain point of tension it causes paralysis of the intestinal muscles just as the bladder or other hollow viscus may be paralyzed by overdistension.

Our prophylactic administration of eserin clinically prevents meteorism, as anyone may prove by intelligent observation. This I explain in two ways: Inasmuch as intestinal paresis is either entirely prevented or peristalsis is very early re-established, the physiologic necessity of bolus stimulation is entirely lacking, hence no meteorism is occasioned. This is, of course, facilitated by an absence of stagnation. Another explanation of the absolute absence of meteorism after the prophylactic use of eserin is the fact that, as stated by Woods, the eserin materially increases the secretion of the intestinal juices which serve to prevent putrefaction.

This absence of meteorism is, of course, greatly to be desired on account of the patient's comfort, but in addition it serves another salutary purpose, namely, the prevention of peritonitis. Kocher[26] has shown, and in common with other well-known authorities is quoted, with agreement by Nothnagel, that the peritonitis which arises in connection with intestinal paresis must be studied from a special point of view, inasmuch as the walls of the intestine, especially those portions which have become paralyzed and in which meteorism develops, become permeable to the bacteria present in the bowel lumen. As soon as these bacteria penetrate the peritoneal cavity peritonitis naturally develops. Kocher further declares that this permeability is not dependent on any one form of occlusion, but is a result of the stretching of the structures of the intestinal wall. If the correctness of this view be granted, how easily many cases of postoperative peritonitis in cases in which meteorism has been allowed to develop and in which the surgeon, his instruments, sutures or assistants have been considered unclean, are explained. And how important the prevention of such meteorism becomes.

Now leaving the question of paresis, let us consider those cases in which, owing to replacement of intestinal coils, the placing of gauze for walling off the operative field, or merely the manipulation of the intestine incidental to exploration, coils of intestine are left in abnormal relationships, twisted or kinked. Nothing can so readily straighten out those kinks and twists as an advancing peristaltic wave. This may be feebly simulated by forcing liquid through a kinked rubber tube. There, too, these kinks and twists, etc., are perpetuated by two factors, first, meteorism which so fills the abdomen as to prevent free adjustment of the intestinal interrelationship, and second, the formation of adhesions. Active peristalsis prevents both these factors and would seem therefore highly desirable.

But, in addition, Oppenheim, Fraser, von Noorden and others have shown that eserin is capable of curing many cases of well-established postoperative intestinal paresis and it is coming to be very commonly so used by those not yet employing it in the prophylactic manner.

26. Kocher: Ileus. Grunzgeb. d. Med. u. Chir., iv. Also, Deutsch. Zfschr. f. Chir., viii.

Here, of course, the finest diagnostic discrimination must be used, as in mechanical obstructions other than as above noted eserin would act even more harmfully than most of our ordinary cathartics.

To illustrate its use in the cure of postoperative intestinal paresis, I wish to briefly report one case of my own and two cases the data of which were furnished me by Dr. I. S. Stone, of Washington:

CASE 1.—I was called on the telephone at 10:30 p. m. by Dr. Hayes of Brookline, who gave me the following

History.—Patient was operated on three days before and all efforts to move the bowel had proved futile. Respiration was much embarrassed by intense meteorism. She had been seen in consultation by three of the best surgeons in Boston, who concurred in the diagnosis of postoperative intestinal paresis. He desired me to see the patient at once. I advised him, accepting the diagnosis of the men who had seen her, and as her condition was desperate, not to wait for me but to give her 1/150 grain of atropin and 1/40 grain of eserin salicylate in fresh solution immediately and I agreed to hold myself in readiness to see her if this first administration failed. Just one hour later Dr. Hayes called me again to say that in twenty-nine minutes after the administration of the eserin immense quantities of gas began to be expelled by the anus and that the patient was very comfortable. She made a good recovery.

The next two cases I will copy verbatim from Dr. Stone's report to me:

CASE 2.—Patient F. U. G., aged 37 years, v-para, widow; induced abortion, resulting in right salpingo-oöphoritis.

Operation.—Removal of rigat appendages. Peritonitis with extreme distension. Eserin salicylate gr. 1/20 given by hypodermic twenty-nine hours after operation. One hour later medium, dark, fluid stool. One-half hour later large, dark, fluid stool. Pulse and respiration improved. Sixteen hours later eserin salicylate gr. 1/20 with nitroglycerin gr. 1/100. Fifty minutes later large, dark, fluid stool. Ten minutes later large, dark, fluid stool. No apparent depression.

CASE 3.—Dr. I., age 43. The patient came for operation after his third attack of appendicitis from which he was just recovering. The present attack was associated with gastro-intestinal catarrh. He is accustomed to the rather liberal use of alcohol and had a coated tongue and foul breath. He is corpulent, although very active and of a rather nervous temperament. After two days rest and "preparation," which included a thorough cleansing of the alimentary canal, operation on Dec. 5, 1904. The appendix was long and adherent, but had not ruptured. No accident nor complication of any kind during the operation or anesthesia. His pulse and temperature remained about normal during the convalescence. Vomiting set in during the afternoon after operation and persisted in spite of lavage and starvation until the end of the fourth day. Eserin salicylate gr. 1/30 hypodermically at 3 o'clock p. m. The patient did not know the nature of the drug but knew that it was for the relief of the vomiting. He declared that the reversed peristalsis was changed to normal in about thirty minutes and that the relief was prompt and very marked, in fact, complete. He was anxious to have a second dose at 10 o'clock and persuaded the interne on duty to give another 1/30 grain at that hour. There were no further bad symptoms of any kind and he left the hospital in less than three weeks.

Finally, just a word about dosage. It must be remembered that eserin can overdo its good work and it is quite easy to cause meteorism and abdominal distension after celiotomy by completely exhausting the intestinal musculature by too large or too frequent doses. I use 1/40 grain on the operating table and very rarely have occasion to repeat it. In the discussion of this subject one man said that in his experience he had found fully as much or even more abdominal distension after the use of eserin than without it. On investigation I found he was using gr. 1/20 to gr. 1/12 for his initial prophylactic injection and repeated it at relatively frequent in-

tervals. I repeated his technic in three cases and invariably got intestinal exhaustion with intense meteorism.

The keynote of success in the after-treatment of cases in which the prophylactic dose of eserin has been administered is letting the patient alone. Her abdomen is soft and comfortable, vomiting is minimized. Thirst is slight and cathartics and enemata are entirely unnecessary. As soon as her diet supplies sufficient intestinal residue her bowels will behave as any non-operative patient who is quiet in bed. In other words, the after-treatment of such cases is purely expectant or symptomatic.

SUCCESSFUL TREATMENT OF ACUTE POSTOPERATIVE ILEUS,

BY INCISION AND DRAINAGE OF THE INTESTINE, WITH REPORT OF FOUR CASES.*

FRANCIS D. DONOGHUE, M.D.
BOSTON.

Some paralysis of peristaltic activity usually follows surgical interference in the abdominal cavity. It is more common after operations on acute inflammatory or suppurative conditions, but may follow apparently slight operations with clean conditions of the peritoneum.

The milder forms are readily overcome by some of the usual postoperative procedures. Those cases which do not yield to ordinary treatment, however, and especially those cases accompanying localized or general peritonitis, present a most dangerous and trying complication.

Whatever may be the actual causative factors in the production of acute postoperative ileus, the practical results are of a mechanical nature, plus poisoning from the products of intestinal decomposition. This peristaltic inertia is often aggravated by adhesions between loops of intestines causing "kinking," or from slight adhesions between the omentum and some viscus or inflamed surface. These adhesions, not in themselves of a character and extent to cause trouble, may become of serious import in the presence of some intraintestinal factor.

SYMPTOMS.

The symptoms of serious postoperative ileus develop early and in twenty-four to thirty-six hours may be well marked. In fact, some operations, while successful in removing a primary cause of trouble, do not cause amelioration of symptoms, so that the developing ileus forms a continuous picture with the condition which was the cause of interference.

Persistent vomiting, changing from a bilious to a stercoraceous character, should put one on guard. With this comes an increase in the abdominal distension which is not relieved by the use of enemata; neither is the vomiting controlled by gastric lavage.

As a rule, the temperature is not increased, unless the basis of the trouble is a spreading peritonitis. In the worst cases of ileus the temperature may be normal or even subnormal. The pulse, however, is a fairly reliable guide. Some hours (twenty-four to thirty-six) following recovery from the immediate operative shock and accompanied by increasing signs of non-restoration of intestinal function, the pulse begins to increase in rapidity and to lose in character and quality.

CLASSICAL SIGNS.

The classical signs of obstruction, notably pain and dulness in the flanks, are obscured and the picture of shock, with persistent vomiting and increasing distension, is presented. As the distension and vomiting increase, profound shock appears which, in a patient unoperated on, would forbid operation.

In postoperative cases, however, a sign which might be accepted as a certain contraindication to operative interference, under ordinary conditions, points conclusively to further surgical intervention if the patient is to be saved.

The purpose of this paper is to point out a treatment that has been found serviceable in these severe cases. The other phases of the question are to be covered by more extended papers in this and other sections.

A certain number of cases of postoperative ileus, in spite of all varieties of treatment directed to non-secondary operation, do badly.

The treatment by the use of eserin[1] and the treatment by physiologic doses of atropin may occasionally be found useful, but when cases have reached a critical state, mechanical treatment offers the best chance for recovery.

The value of intestinal drainage was recognized in the early days of abdominal surgery in connection with cases of diffuse peritonitis of appendicular origin.

Dr. Mixter[2], of Boston, as far back as 1894, advocated, in certain cases of generalized peritonitis, the drainage of distended loops of intestine, either by puncture, or by puncture followed by the tying of a tube into the cecum. Dr. Greenough, of Boston, in 1904, in "Enterostomy in Peritonitis,"[3] reviewed the subject from the time that Dr. Mixter published his first article in 1895.

While the value of enterostomy in acute intestinal obstruction and in cases of slow developing chronic obstruction, which finally give rise to acute symptoms, has been well recognized, its value as a postoperative procedure is yet to be fully appreciated. Its value is threefold: 1. It affords a means for the escape of gas and liquid feces. 2. It affords an opportunity, by the injection of solutions of magnesium sulphate, to provoke peristalsis at considerable distance from the point where the tube has been placed. 3. Stimulating fluids and nourishment can be introduced.

When nourishment or stimulating fluids are introduced through a tube placed at the "point of election" in the cecum, the fluids are rapidly absorbed, maintaining heart and kidney functions, while the lavage of the intestine from copious amounts of warm fluid, with or without the addition of a cathartic, tends to provoke peristalsis in the small intestine many feet away.

In all cases as a preliminary to drainage by the tube at the time of secondary interference, all loops of intestine which are markedly distended should be incised and the liquid contents and gas should be emptied out, followed by immediate closure with a continuous intestinal suture. Large amounts of gas and decomposing intestinal contents are thus eliminated and the intestine given an opportunity to resume its function, which was in part prevented by overdistension.

Introduction of salts into the lumen of the small in-

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* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

1. Ztschr. f. Gynak., March 5, 1904.
2. Boston Med. and Surg. Jour., Feb. 28, 1895.
3. Boston Med. and Surg. Jour., May 19, 1904.

testine at the time of interference I believe to be of no value.

Following recovery from enterostomy, the resulting fecal fistula may be closed by suture or left to Nature. As it causes little inconvenience, and can be readily controlled by a pad on an abdominal belt, it may well be let alone.

Irrespective of where the distended loops occur, a permanent tube should be left in the cecum, not only for drainage but for other treatment.

The cases of serious ileus which I have observed in the female are as follows:

CASE 1.—Mrs. S., aged 28; had been married six years. She has had four children; no accident or miscarriage. She has had no sickness other than periodical attacks of pain in the right iliac fossa during each pregnancy. With these attacks there was nausea, but all trouble was attributed to a growing uterus.

About 5 o'clock on the morning of April 25, 1904, when she was about three months pregnant, she was seized with extremely sharp and colicky pains in the right iliac fossa; this was followed by collapse.

Operation.—Dr. Birmingham of Lawrence was called and advised immediate operation, to which the family would not agree until the afternoon of the same day. That afternoon I operated and found a gangrenous appendix surrounded by about two ounces of purulent matter. There was slight evidence of an attempt at walling off. A gauze drain was inserted. The vomiting, which had been present from the beginning, continued, but little distension developed.

Postoperative History.—The temperature remained between 99 and 100, but the pulse gradually increased in frequency. Considerable fecal matter and gas were discharged, following enemata. Slight vomiting, or rather regurgitation, persisted. The vomiting increased and its character became stercoraceous. This accompanied marked increase in the distension. Facies became anxious and drawn. Convinced that hopeless ileus was developing, the gauze drain was removed under chloroform anesthesia.

The omentum was found adherent down to the region of the appendicular stump. Back of this were loops of intestines greatly distended and containing quantities of liquid feces. After freeing the adhesion, the distended loops of intestine were freely incised, emptied of their contents, and then closed by continuous suture. The cecum was fixed in the wound. This gave relief for a number of hours, but there was no evident attempt at resumption of intestinal function.

The next day vomiting again came on and a tube was tied into the cecum. Through the tube was given two ounces of magnesium sulphate with water, and this was followed, at intervals, by pure alcohol in one ounce doses well diluted with water. Three hours after the injection of magnesium sulphate there was a large liquid movement of the bowels, with mucus. At the same time she vomited a little brownish fluid.

Following this, there was given through the tube peptonized egg and milk—three ounces every three hours—and tincture digitalis, 10 minims; pure alcohol, 2 drams; physiologic saline solution, 4 ounces every two hours.

Pulse, at 8 o'clock on morning following enterostomy, 124; temperature, 98.

There was no more vomiting, with one exception, on the fifth day. This followed severe cramps about umbilicus, which presaged the emptying of the uterus, which occurred on the following day. Alcohol and water, by mouth, was given every three hours, alcohol, ℥ii, water ℥ii.

The tube in the cecum remained for five days and then came away. No attempt was made to close the fistula by suture and it subsequently closed spontaneously.

Eighteen months following the operation this woman gave birth to twins without difficulty. No hernia has developed.

CASE 2.—Miss C., a patient of Dr. Hunt of Newtonville, was operated on for acute appendicitis at the McDowell Hospital, Boston, July 25, 1905. Following an operation for acute appendicitis, marked ileus developed on the third day, pulse reaching 140 and the temperature 101, and persistent vomiting.

The incision, which had been closed without drainage, was reopened. The abdomen contained considerable bloody fluid, which was mopped out, and the distended loops of intestines were incised and emptied. A tube was tied in the cecum. The recovery was uneventful and fistula closed spontaneously about September 15. No hernia developed.

CASE 3.—Miss F., aged 17, was operated on at the Boothby Hospital, Oct. 22, 1906, for acute abdominal symptoms. The pelvis was a mass of adhesions. The intestines were adherent in the mass, one loop making a sharp angular kink. All the intestines in evidence were markedly injected and covered with reddened areas. The pus process was apparently primary in the tubes, which were distended with purulent material. Tubes and appendix were removed and drainage placed in pelvis. She did not react in a satisfactory manner from the operation, and on the day following the operation the pulse was 140 and temperature 97.5. Stomach refused all liquids. The incision was opened and tube tied into the cecum. Treatment by pure alcohol and salines through tube. Thirty minims of tincture of digitalis were given directly into muscle of thigh before secondary operation, and two more doses, each of 30 minims of digitalis, were given in the same manner during the next twenty-four hours.

Patient made an uneventful recovery and left hospital with fistula discharging slightly, at the end of the fourth week.

CASE 4.—Miss R. was operated on at the Boothby Hospital, for fibroids of the uterus, March 10, 1903. There were multiple fibroids of small size all over the uterus and one of considerable size low down on the posterior wall, and to its peritoneal surface there were slight adhesions of the small intestine. Hysterectomy was done and the flaps were closed by continuous suture over the stump. Efforts were made to move her bowels on the second day after the operation, without success, and vomiting commenced, following divided doses of calomel and divided seidlitz powders. On the third day the vomiting and distension increased, pulse in the afternoon was 118 and temperature 100. There was no dulness to be made out in flanks. The fourth day there was stercoraceous vomiting. Under chloroform the incision was reopened and numerous loops of distended small intestines were found, which were very red. Aside from a small portion of the omentum, which was found folded on itself, no particular reason for the ileus was apparent. Free incisions were made into the distended loops, which were emptied and closed by suture. Drainage was left in abdomen. Patient did not improve, but died in thirty-six hours. No autopsy. This patient was treated by incision but without tieing in a tube.

CONCLUSIONS.

Acute postoperative ileus to a degree necessitating secondary operative interference is a most serious condition.

In spite of every care in technic at the time of the primary operation, it not infrequently occurs.

The classical signs of obstruction are obscured or are so modified by the usual postoperative sequelæ as to be misleading.

It may present simply the appearance of a general inertia of the intestines and inability to relieve themselves of accumulated fluids and gases, or it may appear to accompany the development of a somewhat generalized peritonitis.

Involving, as it does, the small intestine, the persistent vomiting, especially after apparently satisfactory results from enemata, more pronounced distension, increased rapidity of the pulse (even with a normal or subnormal temperature), after the first twenty-four hours, should be looked on with suspicion.

If, in spite of persistently applied treatment, relief is not soon obtained, secondary interference is indicated. The treatment should consist of reopening the original incision, puncturing and emptying distended small in-

testine, and closing the multiple punctures, after emptying, by sutures.

When this is necessary, in addition to drainage of the peritoneal cavity, a tube should be tied in the cecum or ascending colon to provide further drainage of the intestines and to afford an opportunity for after-treatment.

It is impossible to clearly define the indication for this treatment, but it will be found a life-saving procedure in cases which are ordinarily classed as hopeless.

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DISCUSSION

ON PAPERS OF DRS. FREDERICK, CRAIG AND DONOGHUE.

DR. CHARLES P. NOBLE, Philadelphia, was much impressed with the optimism of Dr. Donoghue and pleased that any one has had such beautiful resuts as he has secured. His own experience has been such that he has become more and more convinced that the best way to treat intestinal obstruction is to prevent it, because after postoperative intestinal obstruction has occurred it is a most desperate case. His experience has caused him to be far more careful in the selection of the time of operation and in the technic in order to avoid such obstruction. In his opinion the greatest factor in prevention is to refrain from operating during the acute exudation stage of peritonitis, waiting until the acute infection is in abeyance. The same is true of appendicitis, so far as it is possible to follow these rules in this condition. Surgeons operate, if possible, before conditions are present which will develop postoperative adhesions. If there are big abscesses, drain and leave Nature's wall alone, instead of breaking it up, as was advocated formerly. In that way intestinal obstruction also will be prevented. Dr. Noble's experience has taught him that some of the present tendencies in surgery are based on mistaken ideas. There has been a recurrence to the surgery of preanesthetic days in that it is considered desirable, by certain men, to get the patient off the table as soon as possible. This Dr. Noble believes to be wrong. Every operation, he said, should be done carefully, and enough time taken in its performance so that when a patient goes to bed her peritoneal cavity is left in a proper condition. Five, ten or fifteen minutes added to the time of the operation is a very small matter compared with whether one leaves conditions to bring about intestinal adhesions with obstruction and postoperative pain. These are the most important questions concerning intestinal obstruction, because the observation of these principles is what prevents this condition. Years ago Dr. Noble had a number of patients die with supposed septic peritonitis. At the autopsy the peritoneum showed the absence of fluid, and it was perfectly sterile. In the case of one patient operated on for supposed septic peritonitis, the stomach filled the entire abdomen and the supposed septic peritonitis was relieved by putting in the stomach tube and evacuating a bucketful of fluid from the dilated stomach. The shock of the additional operation caused the death of the patient, but this occurrence taught Dr. Noble that the stomach tube is a most valuable adjunct to abdominal surgery. He is convinced that many patients who are supposed to have septic peritonitis or intestinal obstruction have only dilated stomachs. If such stomachs were washed out thoroughly, and, if necessary, repeatedly, recovery would often follow. Dr. Noble is positive that in the last ten years the stomach tube has reduced his mortality 2 per cent. He has never employed the stomach tube before operation unless the patient was vomiting or he felt confident that the stomach was full of food. In such cases he uses the tube to prevent the fluid getting down into the trachea during vomiting. As to the treatment of postoperative obstruction, Dr. Noble said that no matter what is done the patients die. In his entire experience as an abdominal surgeon Dr. Noble has never had a case of postoperative ileus, coming on within a few days or a week following abdominal section. All cases of obstruction have been adynamic or due to septic peritonitis. Dr. Noble asked Dr. Donoghue whether he washes out the stomach before he operates; whether he operates under general anesthesia; how he empties the intestines; how he protects the peritoneal cavity from infection, and when he drains the cecum, whether he places the tube through the central incision or makes a new one.

DR. E. E. MONTGOMERY, Philadelphia, divided the treatment of this condition into the preventive and the curative. In the preventive treatment the important consideration lies in leaving as little raw surface as possible for the development of adhesions. The use of the sigmoid to prevent the small intestines from contact; the gauze packed in the opening, and the administration of remedies to increase peristalsis, are valuable aids. Dr. Montgomery has depended on atropin and aseptic ergot for this purpose more particularly than on eserin. The changing of the position of the patient from side to back and back again is also a method which he has found helpful. When the patient shows indications of obstruction and vomits continuously, lavage of the stomach has an influence not only in decreasing pressure from above, but also removes irritating and decomposing material which is detrimental to the patient. When these and similar remedies fail to relieve the abdomen should be reopened. Frequently it will be found that a part of the intestines have become adherent at the outer surface. Subsequently obstruction will take place, not only in the venous circulation, but in the caliber of the intestine itself. Dr. Montgomery referred to a patient now recovering from a secondary operation in which a lesion of this kind occurred. When he saw the patient she was very averse to having the abdomen reopened. To satisfy her, the pelvis was elevated and she was given large enemas, two quarts at a time. There was at once free evacuation of the bowel, a large quantity of flatus passed, and the patient apparently was relieved, but within a few hours the abdomen again became distended. Dr. Montgomery then opened the abdomen and found a single adhesion of a knuckle of intestine at its outer surface, which was then twisted. The twist showed no adhesions except in its outer portion. He is convinced that had the condition been permitted to go on it would have resulted in death.

DR. JOSEPH TABER JOHNSON, Washington, D. C., insisted that many of these cases ought to be prevented by the treatment mentioned. By devoting sufficient time, care and thought to the prevention of these conditions fewer obstructions will occur. Dr. Johnson condemned the custom of admitting patients to the hospitals, and operating the next morning, without knowing the condition of their kidneys, heart and powers of resistance. He feared that this preparatory and precautionary treatment to which the patient is entitled is sometimes neglected. Where real obstruction has occurred in spite of the preparatory treatment Dr. Johnson believes that the secondary opening of the abdomen will not amount to very much. He thinks that the fate of the patient is largely settled when she gets off the table. As was stated by Emmet, these operations are composed of a thousand details, any one of which, if neglected, may prove fatal. By not neglecting any detail there will be few cases of postoperative obstruction, but when they do occur little benefit is to be expected from operative treatment.

DR. I. S. STONE, Washington, D. C., gave it as his opinion that only on very unusual occasions should the abdomen be opened a second time. He agreed with Dr. Johnson that when a patient is put to bed her fate is sealed, as a rule. When it is necessary to reopen the abdomen in the first forty-eight or seventy-two hours for any obstructive lesion, it is very difficult to save the patient. Dr. Stone said that he would not feel his conscience to be clear unless he had tried eserin hypodermically and alumn enemas. He has had many years pass without a single death from postoperative intestinal obstruction. He has operated for postoperative obstruction, but the patients have been saved in the few instances when this was done. Dr. Stone agreed with Dr. Noble that obstruction due to peritonitis is a much more serious matter than ordinary postoperative obstruction. In regard to reversed peristalsis, Dr. Stone thought that some of these reports looked too much like laboratory findings for a practical man to believe, to act on, and to lay down as a course for future action. In illustration, he mentioned a case of volvulus in which a lateral anas-

tomosis of the lower end of the distended gut to the cecum was done. The patient had been vomiting, had a swollen abdomen, and had intestinal obstruction for five days. Operation was done before gangrene had begun. For some days after operation there was fecal vomiting. The stomach was washed out frequently. The patient had no marked obstruction after operation. She had what Dr. Stone terms reversed peristalsis, because from the time of the operation, every day, certainly for five days, the patient continued to vomit fecal matter. Eserin was given, and although it gave good results each time it was administered, three or four days elapsed before the woman was entirely relieved from the regurgitant vomiting. Dr. Stone did not agree with the idea entertained by some that peristalsis is necessarily a great wave of the intestines from one side of the abdomen to the other, so that no raw surface will be in danger of adhering to its former site. He believes that it is a contraction behind the "bolus," pushing it forward and with slight lateral motion. He thought, further, that a return to the practice of filling the abdomen with water or adrenalin solution, expecting it to remain there indefinitely and prevent adhesions, is going back over ground which ought to be considered settled, and looks like lost time. Dr. Stone was very greatly pleased with Dr. Craig's remarks in regard to the therapeutic use of eserin. He has had a number of cases in which, three or four days after operation, there had been no satisfactory result from the use of enemas. In such cases 1/40 grain of salicylate of eserin will, as a rule, afford prompt relief without the use of other purgation.

DR. SETH GORDON, Portland, Maine, has seen many of these cases, but, fortunately, has not had many cases of so-called intestinal obstruction, which to him means peritonitis, with more or less germs inside that are making much trouble. He likes to get at these germs as early as possible and get them moving on. He gives these patients milk of magnesia. It allays nausea and vomiting, and prompt action of the bowels is secured. Theoretically he believes in the use of eserin as indicated by Dr. Craig, and he did not doubt the results reported, but he thought that surgeons are too much in a hurry about some of these cases. They are very apt to want to do something. He believes in making haste slowly. The patient will come around often if one does not pour in salts, and if high enemas are given. One of the most effectual methods of treatment in Dr. Gordon's hands has been the use of the high enema of normal salt solution, with 15 to 20 grains of quinin added. It will start the gas quickly. If the patient is vomiting stercoraceous matter the stomach pump is one of the best things to use. Pour in all the normal salt solution the stomach will hold, turn the pump down and let the solution run out. Then the patient may be permitted to drink all the water she wants, and she will have something to vomit, if she is inclined to vomit. Dr. Gordon has obtained much satisfaction from the use of milk of magnesia and quinin. The condition in most cases is one of atony of the intestines.

DR. A. GOLDSPOHN, Chicago, agreed with the previous speakers that the preventive treatment is more important than the operative in a pronounced case. He believes in thorough emptying of the intestinal canal. His favorite remedy is one to two ounces of castor oil twenty-four hours before operation, or as soon thereafter as possible. The excess of oil passes through the patient. Then the patient is given, at least, two half-gallon enemata, one four hours after the oil and the other three or four hours before the operation. Strychnia is given as a general tonic. Liquid diet only is given for twenty-four hours before operation, but is continued up to six or eight hours before operation. An abundance of water is taken by the patient during the night preceding the operation. If the patient is feeble Dr. Goldspohn prefers to give strychnin. In the case of very feeble patients, those with some organic heart trouble, he resorts to the hypodermic use of camphorated oil, sterilized, two or three grains of camphor at a dose, a few hours before the operation. Then, in performing the operation itself, he has been much guided by some experiments made about ten years ago by Walcher. He found that when two knuckles of intestine were exposed for twenty minutes to dry, sterile air, and were then replaced in the abdomen, in contact with each other, that in ten to fourteen days the intestines would invariably be found to be united. He attributed this to the desiccating effect of dry air. The lesson Dr. Goldspohn drew from this is that the intestines should never be in sight, never present in the field of operation. It is his habit to wall off the general abdominal cavity and separate it from the field of operation. In this way the traumatism of the intestine and the evil effect of the air are obviated. This walling off is done, preferably, by means of large moist pads. All hemorrhages should be checked and raw surfaces covered, when this can be done without fixing the omentum, which should be left free, like the intestine.

DR. JOHN B. DEAVER, Philadelphia, recognizes three varieties of paresis: Paresis immediately following operation; paresis the result of true intestinal obstruction, and paresis the result of septic peritonitis. The first, he said, unquestionably is due to prolonged operation and meddling too much with the intestines—unnecessary handling. When he operates he aims to get in quickly, stay as short a time as possible, and get out quickly. Masterly inactivity counts for much. He sees a large number of cases of intestinal obstruction each year, but rarely in a clean case. Dr. Deaver said that it is easy enough to talk about covering raw surfaces, but it is not always possible to do this, and in some bad cases it becomes necessary to close the abdomen without doing so. Leaving in salt solution is a good practice, yet he doubts if it has any influence on recurring obstruction. It is his principle not to go to the extreme with the Fowler position. In suppurative pelvic appendicitis the Fowler position is bad. Elevation of the foot of the bed is better in this type of case. In Dr. Deaver's experience the percentage of cases of intestinal obstruction is one in every sixty of acute appendicitis. He does not wait for extreme symptoms; he operates. Dr. Deaver agrees with Dr. Boldt that surgeons should get their patients up earlier than they have done in the past, and should allow them more liberty while in bed.

DR. HENRY D. FRY, Washington, D. C., referred to a case of intestinal obstruction that occurred after Cesarean section, on about the second day. The woman began to vomit and her abdomen became enormously distended. Salicylate of eserin was given and evacuation of the bowels secured, but the symptoms were not relieved at all. The woman died on the fourth or fifth day. The autopsy showed a kink at the duodenum with the intestine closed entirely. In another case following Cesarean section, the woman began vomiting on the second day, and her abdomen became much distended at the upper part of the bandage. The stomach tube was passed and a large quantity of gas was evacuated. The stomach was washed out, and three ounces of a solution of sulphate of magnesia left in the stomach. The woman was purged freely, and all symptoms disappeared. Dr. Fry has used eserin, but did not get the evacuation desired. In one case the patient seemed greatly collapsed after its use.

DR. J. H. CARSTENS, Detroit, Mich., thought that extensive handling of the intestines is due to the fact that the patient is often not fully anesthetized. More patients are killed in that way than by getting them profoundly under the anesthetic. Then the intestines drop away and do not need to be handled. Another point, he said, one mentioned by Dr. Gordon, is this great anxiety to move the patient's bowels, when the bowels have already been cleaned thoroughly before. As Dr. Deaver says, the patients have wind colic. There is nothing in the bowels to move. They will move of their own accord as soon as they get a little something into the stomach. Once in a while Dr. Carstens has adhesions in the pelvis following vaginal hysterectomy or similar operation. It has seemed to him that in a few such cases he has been able to relieve the condition by massage, by external manipulation, pulling out the loop of intestine. Dr. Carstens believes that the symptoms of intestinal obstruction are sometimes due to sepsis. He has had cases when just a little stitch abscess in the abdomen caused all the symptoms, and letting out the pus relieved the patient entirely. Some people are peculiarly affected by sepsis, such as causing irritability of the stomach. As to the treatment, he knows that atropin will relieve some of these patients. A

twenty-fifth of a grain of atropin, hypodermically, followed by an alum enema, is beneficial. Atropin sometimes does good, and eserin sometimes does good.

DR. S. W. BANDLER, New York City, said that attracted by the writings of Dr. Craig and others, he began the occasional use of eserin several years ago, but found that it did not always work well. Acting on the principle that it is better to prevent distension of the intestine than to correct it after it occurs, he began to use eserin immediately after operation, but found that he did not always get a good result. Finally, he began its systematic use by giving 1/80 of a grain, hypodermically, every four hours, some times employing it for three or four days in patients in whom no marked pain resulted. In other cases he began its use only when the pain started. He has introduced it into his own practice now as a routine measure, and has tried it in over 200 cases. The discomfort of the patients has been markedly diminished, and much less medication is required to make them comfortable. He stated that shortly statistics will appear from one of the New York hospitals giving a certain number of alternate cases in which eserin was and was not given after operation, with the results obtained. In the prevention of adhesions by increasing the motility of the intestines he has found it correct in theory and to work well in practice.

DR. F. W. SEARS, Syracuse, N. Y., had a case exactly like that of Dr. Noble in which he opened the abdomen and found a distended stomach. This was washed out, but too late. Since then he has used a stomach tube oftener and with better results. He urged that one should not lose sight of the fact that appendicitis during pregnancy is quite common and should not be overlooked. As to infection of the patient from the blocked-up material in the intestinal tract, he recalled cases of strangulated hernia in which, if he had washed out this material back of the ileus he believes he would have saved more lives.

DR. X. O. WERDER, Pittsburg, agreed with what was said in regard to the prevention of ileus, and particularly emphasized the points brought out by Dr. Noble. The most important factors in the prevention of this complication are: Better asepsis; a more complete operation, especially covering up all raw surfaces with peritoneum, thus minimizing adhesions, and more complete hemostasis, controlling all bleeding surfaces before closing the abdomen. The most important point, however, in the prophylaxis of ileus, in pelvic surgery at least, is to do the operation at the time of election, that is, when all acute symptoms have subsided, as at that time the pathogenic organisms have become, if not actually sterile, at least less virulent, and postoperative complications are, therefore, reduced to a minimum. It has been Dr. Werder's practice to wait at least three or four weeks after all acute symptoms have subsided before operating. It is largely to these prophylactic measures to which he attributes the fact that during the last five or six years he has not had a single case of postoperative obstruction of the bowels.

DR. JOHN M. FISHER, Philadelphia, was confident that 50 per cent. of his patients supposed to be suffering from peritonitis had gastric distension, and in these cases the stomach tube has given prompt relief. He thought that vomiting following operation, associated with abdominal distension, the result of gastric dilatation, is very often mistaken for peritonitis and intestinal obstruction. To determine the cause of the vomiting, one must take into consideration the influence of the anesthetic on the stomach muscle and the particular type of patient under treatment. Patients of a nervous type are usually more prone to ether vomiting and gastric distension. It is Dr. Fisher's practice following abdominal operations to give one-half grain of phosphate of codein to relieve both pain and gastric irritability. In bilious vomiting, likewise, the quickest relief is obtained by the use of the stomach tube. Regarding the differential diagnosis of dilatation of the stomach and intestinal obstruction, he said that in dilatation of the stomach there is usually a well-marked projection at the upper portion of the abdomen which comes to an abrupt end at the ensiform cartilage, and the vomited material presents a smoky dish-water hue. The condition is readily confirmed and relieved by the stomach tube. As to the statement made that in practicing lavage the stomach should be filled as full as possible before emptying it, Dr. Fisher considers this a most pernicious practice because the stomach muscle, already partially paralyzed by over-distension, may lose its tone entirely. In one particular instance he lost a patient in whom the resident physician produced acute gastric dilatation by his too persistent efforts in this direction, and he is confident that numerous other cases of so-called deaths from general peritonitis could be traced to the same cause, if properly analyzed. The object should be not only to empty the stomach of its contents, but to relieve distension and restore its muscular tone by repeated washings with small quantities of hot saline solution.

DR. F. D. DONOGHUE, Boston, stated that he uses, first, enemata, and, secondly, lavage of the stomach. If in spite of these methods the distension persists, he reopens the original incision. It seemed to him that the peritoneum in these cases is not so susceptible to infection as in a primary operation. He opens the intestines loop after loop. The tying of the tube into the cecum is done, as a rule, through the original incision. In none of the four cases reported was it necessary to make a fresh incision. If the cecum can not be brought up into the original incision, Dr. Donoghue thinks it is better to make a buttonhole incision directly over the cecum and tie in the tube there, while closing the other incision with drainage. The method of tying the tube in is very simple, being done with a running purse-string suture, rather than by holding the edges of the incised cecum up over the collar of the tube by forceps, and then tying with an ordinary ligature. A Mixter tube, three-eighths of an inch in diameter, is serviceable in most cases. When the tube separates, as it will, after four or five days, the fistula, it was said, can be controlled by strapping, and it is not necessary, as a rule, to close the cecum by secondary suture.

DR. C. C. FREDERICK, Buffalo, said that he brought the question of septic peritonitis into his paper simply in the discussion of differential diagnosis of true intestinal obstruction and that obstruction which is due to peritonitis, which, of course, is not true obstruction. He did not intend to bring into the discussion the questions of wind colic or those questions of irritability of the stomach with vomiting and disturbance incident to the anesthetic, postoperative, to the ill-advised use of cathartics and food and liquids put into the stomach. He simply wanted to bring out salient points in true intestinal obstruction. If the physician before operation can diagnose in his patient the difference between these conditions which are not due to mechanical obstruction, but which are symptomatic, he said it is all right for him to wait, because if he waits the musculature of the intestinal tract will return to normal and the patient's bowels will move whether he or she is given eserin or something else. He believes, however, that the weight of evidence will show that when one has true intestinal obstruction, the patient will be killed by waiting, no matter what treatment is given in the meantime. Make the diagnosis, if possible, and sift out the conditions, and then operate if there is true obstruction. If one is going to operate for obstruction, it should be done early. He has always failed on that side by yielding to the patient's friends and waiting, and then having the patient die.

DR. D. H. CRAIG, Boston, stated that he did not want any one to infer that he would use eserin in mechanical obstruction any quicker than he would castor oil. It is absolutely contraindicated. The treatment of mechanical obstruction is mechanical. Dr. Cannon and many others have proved that handling the intestines causes paresis. Dr. Donoghue, however, takes the intestine, which he claims is paretic, and handles it some more until it contracts. Dr. Donoghue's cases, he thought, were apparently examples of paresis secondary to a mild infection and not a true adynamic paresis. Eserin, he said, is not a cure-all, but it helps to eliminate factors which one can not differentiate. Dr. Craig did not want to be considered as belittling any other possible means of preventing postoperative adhesions. He does not neglect any known factor in the prevention of these adhesions, and believes in operat-

ing as quickly as is consistent with good work and that the intestines should be handled as little as possible. Every possible attention should be paid to technic, but he suggested the use of eserin as an additional prophylactic. Dr. Cannon, he said, has, by feeding a bismuth laden, and hence, to the fluoroscope opaque, pabulum, has been able to tabulate accurately the amount of material passing from the stomach into the intestine in a given time. In his experiments, in cooperation with Dr. Murphy, it was learned that simple exposure of the intestines to the air did not arrest peristalsis, but that the most gentle handling absolutely inhibited all motion for five hours. In more recent experiments this bismuth laden pabulum was given, the abdomen opened and the intestines manipulated and eserin was given, as detailed below. In control experiments it was learned that no material passed the pylorus for five hours, then, action beginning at the end of one hour 7 cm. had passed; at the end of two hours 34 cm. had passed, and at the end of three hours, that is, eight hours after the operation, 43 cm. had passed into the duodenum and jejunum. In the cases in which eserin was used an observation was made one hour and a second two hours after operation, and no material was found to have passed the pylorus. At the end of these two hours 1/60 of a grain of eserin salicylate was given subcutaneously, and at the end of one hour, three hours after operation and two hours earlier than the first passage of the pylorus begins without eserin, he found that 38 cm. of the opaque material had passed the pylorus, thus showing conclusively the action of eserin in overcoming (and preventing) postoperative intestinal paresis.

THE PRESENT STATUS OF THE TRANSMISSIBILITY OF BOVINE TUBERCULOSIS

AS ILLUSTRATED BY INFANTS AND YOUNG CHILDREN.*

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Koch, in his historic address before the British Congress for Tuberculosis in 1901, called the attention of the medical profession throughout the world to the question of the intercommunicability of bovine and humane tuberculosis.

That there was a distinct difference in the morphology of the tubercle bacillus of bovine and of human origin had been convincingly shown by Theobald Smith of Boston in 1898. Koch went further and denied the transmissibility from man to cow and *vice versa*. He was the first to state authoritatively that tuberculous cattle are not a source of infection to human beings.

Behring takes the opposite view and claims that all tuberculosis is of bovine origin, the bacilli entering the system during childhood and in most cases remaining latent for years. Such diverse opinions, held by eminent and scientific authorities, have aroused the widest interest and bred countless controversies.

No attempt will be made in this paper to review or analyze the vast amount of literature that is accumulating on this subject. Reference, however, to some of the more important papers is necessary to understand the present trend of opinion.

The Royal Commission in England, which spent several years in its investigations and whose report has just been published, cast some doubt on the theory of two sharply defined types of the bacillus. de Schweinitz and Salmon, in this country, have never accepted the existence of two distinct types. They believe the differences are due to the host and both have a common origin.

On the other hand, the German Commission and most of the French and German bacteriologists believe the existence of two types is proved and established. Theobald Smith, Ravenel and the great majority of American pathologists, most of whom have done experimental work to decide this very important point, agree that there are two types of tubercle bacilli, distinct in cultural characteristics, virulence and morphology.

The claim made by Koch that the human type will not infect cattle has been disproved by many observers. Ravenel in this country, Kossel in Germany, and the Royal Commission in England, have all produced bovine tuberculosis from the human bacillus. It must be stated, however, that this only rarely occurred in feeding experiments and was successful in a small number of instances after inoculation and injection. The experiments show that the human bacillus is not very virulent to cattle. On the other hand, the bovine bacillus is very virulent to cows and swine.

The question of greatest concern to us is whether the bovine bacillus is transmissible to man and, if so, to what extent? This is a question that can not be demonstrated experimentally and must be judged from inferences. But as inferences are not admissible in solving a scientific point, we must approach this question from a careful clinical study in conjunction with pathologic and bacteriologic examinations.

Two queries naturally suggest themselves in this connection. Do bovine bacilli occur in milk and, if so, are they pathogenic for children? Delepene found virulent tubercle bacilli in 17.6 per cent. of a series of specimens collected in Manchester. It is generally believed that the udders must be infected before bacilli are found in the milk. Adami, however, found bacilli in 60 per cent. of tuberculous cattle in which there was no lesion of the lacteal tract. Ravenel experimented with five cows with no physical signs of tuberculosis but reacting to tuberculin and later confirmed the diagnosis on autopsy. The milk of these cows was inoculated into guinea-pigs, of which number 18.7 per cent. became infected by a single dose of milk from cows having no disease of the udder. Rabinovitsch of Berlin obtained similar results.

It is difficult to state the exact frequency of tuberculosis in cattle. This depends on the herd, surroundings, climate, etc.

In Massachusetts, in 1901, over 24,000 cattle were tested with tuberculin, and half, or 50 per cent., were positive, but these were suspected and selected cattle. In Connecticut 14 per cent of the cows were tuberculous and in New York 15 per cent.

The Wisconsin Experimental Station found 35 per cent. of suspected herds tuberculous and 9 per cent. of non-suspected herds. The statistics show that tuberculosis in cattle in the United States is far from an uncommon occurrence.

If bovine tuberculosis is transmissible to children, it must be through the milk, and if all milk containing tubercle bacilli was capable of producing tuberculosis, very few of us would escape.

In view of a very confusing literature, and wishing to establish a scientific clinical justification for the transmission theory, I addressed a circular letter with questions bearing on this point to the members of the American Pediatric Society, to teachers of pediatrics not members of the society, and to several prominent pathologists who have contributed to this subject.

Seventy-nine letters with a list of questions enclosed were sent and replies have been received from sixty-

* Read before the National Association for the Study and Prevention of Tuberculosis, Washington, D. C., May 6, 1907.

seven, and I wish to express my appreciation of the kindness and courtesy of these gentlemen.

The first question was: "Do you believe that bovine tuberculosis is transmissible to man?" Five replied in the negative and twenty-five would express no opinion. Of the thirty-seven answering "Yes," ten qualified their answers by saying that transmission occurred "in relatively rare cases," "exceptionally," "to a very limited extent," etc.

The second question was: "'Have you in your personal experience seen cases which you believe to be such?" There were only nine affirmative answers to this question. The remaining twelve questions pertained to the clinical, pathologic and bacteriologic points. In the cases reported by six of the nine, infection by the bacilli of human type could not be excluded because no bacteriologic determination of the type of the tubercle bacilli had been made. Three men reported seven positive cases where the infection came clearly from the milk and the bacilli proved to be of bovine origin. These, with twenty-two cases collected by Bovaird in 1905 out of the medical literature of fifteen years previous, makes twenty-nine positive cases of bovine tuberculosis transmitted in the milk of tuberculous cows.

To summarize: Forty of the sixty-seven answers to the questions of bovine transmission were negative, noncommittal or restricted. Nineteen simply answered yes, and nine were able to report cases, of which number only three recorded cases in which the bacillus had been proven to be of the bovine type. One well-known clinician of large experience wrote: "I have been trying to find some well authenticated case of transmission of bovine tuberculosis, but to my surprise I have been unable to do so."

In this connection I will quote from the letter of Dr. Ruhräh of Baltimore.

> Of two institutions for children in this city, one has tuberculosis, the other none. In the one where tuberculosis exists there have been pre-existing cases for years and the source of infection is plain. Both use milk from a general dairy, and if the infection came through the milk there ought to be tuberculosis in both institutions. I know of two other institutions where there are children and no tuberculosis. Considering the frequency of tuberculosis in cattle, the transmission would be hard to avoid if it commonly occurred.

The importance of making a thorough examination of all the factors entering in the study of a clinical case is illustrated by the following personal experience:

In February of this year I was called to see a case of tuberculous meningitis in consultation with Dr. Turner of Ticonderoga, N. Y. The child was 14 months old, of healthy and well-to-do parents. There was absolutely no history of tuberculosis on either side of the family and the other children were strong and well. The parents lived in a large detached house about one-half mile from the village. None of the servants had tuberculosis or had friends or relatives with tuberculosis. The baby had been exclusively breast fed until it was 12 months old, when he was gradually weaned on milk obtained exclusively from two cows belonging to a neighbor.

In the absence of all apparent human contagion the milk was suspected and the local veterinarian was instructed to test both cows with tuberculin. The report came that one of the cows had reacted with a temperature of 103 F., while there was no reaction in the other. These facts were reported to the New York State Department of Agriculture and the suspected cow was condemned and brought to Albany for slaughter and autopsy. On arrival in Albany Dr. Kelly, the state veterinarian, made another tuberculin test with a negative result. Nevertheless, the cow was slaughtered and a most careful autopsy performed without revealing a single tuberculous lesion. The milk from the cow had previously been fed and injected in guinea-pigs with no resulting infection in any of the pigs after seven weeks. Dr. Hacker of the Bender Hygienic Laboratory went to Ticonderoga and performed the autopsy on the child, and the followings notes are taken from his report:

> W. F., aged 14 months. Autopsy at Ticonderoga, N. Y.
>
> *Clinical Diagnosis.*—Tuberculous meningitis.
>
> *Anatomical Diagnosis.* — Tuberculous cerebrospinal meningitis. Tuberculosis of spleen. Tuberculosis of peritracheal lymph nodes. Fatty degeneration of liver. Hyperstatic congestion of lungs.
>
> *Microscopic Diagnosis.*—Acute miliary tuberculosis of lung and liver. Fatty degeneration of liver. Cloudy swelling of kidney.

Specimens from several of the organs were sent to Dr. Theobald Smith, of Boston. Bacilli of the bovine type were not found in these specimens.

The source of infection in this case seemed at first glance to come directly and positively from the cow. The baby had been exclusively breast fed until receiving for about six weeks the milk from these cows. There was no hereditary tubercular taint and absolutely no known exposure. One cow was reported tuberculous and the chain of circumstantial evidence seemed conclusive. But the absence of any tubercular disease in the cow at autopsy and the negative results after feeding and inoculating guinea-pigs with the milk honorably acquitted the cow from any participation in this tragedy. The erroneous result after the first tuberculin injection was probably due to faulty technic or some other cause of temperature in the cow. I may state here that Dr. Kelly made a physical examination and two tuberculin tests on the cow that was reported healthy, but with negative results.

The point of entry of the bovine bacillus is through the alimentary tract. Raw, of Liverpool, would divide tuberculosis in children into two groups, the pulmonary form being the result of inhaling tubercle bacilli of the human type and the abdominal or glandular form being due to the bovine bacillus taken into the system through the digestive system.

Some authorities, notably Behring, Vallee and Calmette, deny that infection ever takes place through the lungs. Ravenel believes that tubercle bacilli can pass through the intestinal wall and be carried to distant parts without any involvement of the intestinal mucous membrane. The bacilli enter the thoracic duct and find their way into the lungs and mediastinal glands. There can be little doubt, however, in the mind of an unbiased observer, after a careful study of the literature, that infection takes place both through the air and the food.

Dr. Pearce, of the Bender Hygienic Laboratory, gave me permission to look over the autopsy records on file from 1896 to 1906. Out of 1,041 autopsies, 154 were under 5 years of age. Tuberculosis occurred fourteen times under 5 years. Of these, three were noted as primary intestinal tuberculosis, i. e., the involvement of the intestine was the oldest and primary lesion.

At St. Margaret's House for Infants, 157 have died among 935 admissions since 1901. A clinical diagnosis of tuberculosis was made in six cases, which was confirmed in three cases by autopsy. (These autopsies are included in those quoted above from the Bender Labora-

tory.) In no instance was there any primary intestinal tuberculosis. This institution admits only infants under 12 months and discharges them when they reach the age of 2 years. Raw milk obtained from untested cows has been the only milk used for six years.

Our experience in Albany is in accord with observations in this country and in France and Germany. Hoit found no case of primary intestinal tuberculosis in 119 children dying from tuberculosis. Bovaird found two cases in 125 autopsies; Northrup, three in 125; Hand, ten in 115 autopsies on tuberculous children.

In Great Britain the primary involvement of the intestine is much more frequent than in other countries. Shennan, in Edinburgh, found primary intestinal lesions in 28 per cent. of his autopsies, and the figures in London and other parts of England range from 18 to 30 per cent. No satisfactory explanation has yet been made to account for this great difference and no light was shed by the present investigation.

Primary intestinal tuberculosis in young children is claimed by many writers to be of bovine origin. Theobald Smith studied five cases of primary intestinal tuberculosis, and only one of the five was proved to be of the bovine type. The Royal British Commission studied sixty cases of human tuberculosis, but in the abstract of their report in the *British Medical Journal* no mention is made of how many of these were primary intestinal. Nevertheless, of these sixty cases, only fourteen were of the bovine type. Young children do not expectorate, but swallow all bronchial secretions and crawl around in the dust and dirt, placing every movable article in their mouths so that the chance of infection with the human bacillus is very great.

Comby, before the International Congress of Tuberculosis in 1905, made the emphatic statement that, from his observations, milk played no appreciable part in the spread of tuberculosis in children. Human or family contagion is the greatest danger and one that should not be minimized.

Sterilized milk is almost universally used for infant feeding in Paris, and, while it has resulted in a marked diminution in the death rate from intestinal diseases, yet the mortality from tuberculosis in young children has increased.

Statistics from all sources show that tuberculosis is relatively rare in the first six months of life and that the greatest number of cases occur between the second and sixth year. If tuberculous milk was such a great source of danger, the greater number of cases would appear before the second year.

It is feared that little has been said in this paper to bring this important problem nearer a solution. Authorities we all respect are at variance over this issue. Clinical evidence has been, in the main, negative. The literature is so voluminous and contradictory that it is impossible to make any definite declaration of the present status of the transmissibility of bovine tuberculosis.

That tuberculous cattle are a menace to public health and give the disease through their milk in rare instances has been proved. Efforts to stamp out the disease in cattle should be made, but the attention of the public should not be diverted from the great and very real danger of human contagion. Whether this takes place through the respiratory or digestive tract is immaterial.

In view of the practical bearing of this question from a sanitary, hygienic and dietetic point of view and the evident confusion and lack of positive knowledge, I would earnestly urge that this Section take up a further and systematic study of bovine tuberculosis and its transmission through milk. A committee to consist of a pathologist, bacteriologist, veterinarian and two medical (clinicians) men could be formed to make a report at each meeting of the work that is being done in different countries and to urge and see that a differential bacteriologic examination be made in all suspected cases not alone of intestinal involvement, but of the bronchial glands, lungs and tonsils.

FURTHER EXPERIMENTS WITH THE WOOD-TICK IN RELATION TO ROCKY MOUNTAIN SPOTTED FEVER.*

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Experiments which I previously reported show that the adult male and female and the nymph of the Rocky Mountain woodtick (*Dermacentor occidentalis*) are able to acquire and transmit spotted fever.[1]

In this paper experiments will be reported which show: 1, That the larva may acquire the disease and remain infective during the nymphal stage; 2, that the virus may be transmitted from an infected female to her young through the eggs; 3, that the virus exists in both the gut and the salivary glands of the infected tick.

I. INFECTION OF THE LARVA.

In these experiments the possibility of the larvæ having acquired the disease from the female parent through the egg was excluded by testing the females on healthy guinea-pigs before they deposited their eggs, and it is to be understood that all the larvæ used in these experiments came from females which had been tested in this way and found uninfected.

When from one-third to three-quarters of the eggs of one or more females had hatched, the bottle which contained them was placed in a tick-proof cage with a guinea-pig. As the eggs hatched, the living larvæ were removed from the bottle and placed on the guinea-pig, where they were left to feed or to drop off until ready to feed. Within a few days the guinea-pig was inoculated with spotted fever and the course of the fever and the condition of the animal were observed daily. When the larvæ had fed sufficiently they fell from the animal and crawled up on the canvas which covered the cage. From this location they were removed and placed in boxes to await moulting and the nymphal stage, and when a sufficient number had reached this stage they were placed in a fresh cage with a healthy guinea-pig on which they were allowed to feed.

It was considered preferable to carry on the experiments in this way, *i. e.*, to infect as larvæ and to test as nymphs, rather than to attempt both steps during the larval stage. The latter course would have involved serious difficulties, and, moreover, the results have a more practical bearing when it is shown that the tick, having acquired the disease as a larva, remains infective after reaching the nymphal stage.

Larval Infection 2.—On July 8 several thousand normal larvæ were placed with an infected guinea-pig (670). A large number fed, dropped off and were isolated, and when they began to moult were placed with a normal guinea-pig (717). After a period of six days the temperature of the latter rose to 105.7 F., and on

* This work has been supported by an appropriation made by the legislative assembly of the State of Montana, at the solicitation of the Montana State Board of Health, and aid has also been rendered by the University of Chicago, and by the Memorial Institute for for Infectious Diseases, Chicago.

* From the Department of Pathology of the University of Chicago.

1 THE JOURNAL A. M. A., Aug. 4, 1906, p. 358; Oct. 6, 1906, p. 1067; July 6, 1907, p. 24. Jour. of Infec. Dis., Jan. 1, 1907, p. 141.

subsequent days it registered 105, 106, 105.4 and 105 F. The animal was found dead on July 20, after six days of fever and twelve days after it was placed with the ticks.

The condition at autopsy was typical for spotted fever in the guinea-pig. The spleen was enormously enlarged, fairly firm, cyanotic and granular. The inguinal, axillary and mesenteric lymph glands were deeply congested or hemorrhagic, and the surrounding areolar tissue was congested. The kidneys and suprarenal glands were enlarged and congested. The liver was somewhat enlarged. The heart and lungs appeared normal. No hemorrhages had occurred in the external genital organs. The guinea-pig was a female, and hemorrhages are less constant in the vulva than in the scrotum. Cultures on agar slants made from the heart, spleen and kidney remained free from growth. Twelve enlarged nymphs were removed from the pig and cage, and this may be taken as a fair index of the number which had fed.

Guinea-pig 732 likewise was infected by the remaining nymphs, the animal making an eventual recovery.

Of the several thousand larvæ placed with the infected guinea-pig, 670, only a small proportion fed during the course of the fever. Under the title of Larval Infection 7 the remaining larvæ were exposed to infection on guinea-pig 637, which was inoculated on the fourth day after being placed with the larvæ. This animal had been used previously in testing ticks found in nature, but had not been infected, a fact which was shown by the typical course of fever which followed inoculation.

The larvæ which fed on guinea-pig 637 were collected and after they had reached the nymphal stage were placed with a normal guinea-pig (725). The temperature of the latter rose to 104.7 F. on the sixth day and death occurred three days later. Although this is a rapid course for spotted fever, the anatomic changes were characteristic. They were, enlarged and intensely congested lymph glands; enlarged, cyanotic and rather firm spleen, and incipient scrotal hemorrhages. No gross changes were discoverable in the other organs, and inoculations of agar slants from the liver, spleen and heart's blood showed no growth. At least seven nymphs had bitten the guinea-pig. In order to corroborate this result further a monkey was inoculated from an emulsion of the liver, spleen, kidney and suprarenal gland. The temperature of this animal on the second day rose to 104 F., and on subsequent days registered 105.8, 104.7, 105.4, 104.1 F., and death occurred on the seventh day after inoculation. The following were the essential changes seen at autopsy: Beginning hemorrhages in the skin of the eyebrows and cheeks; the whole perineum was cyanotic and showed a roseolar eruption; the lymph glands everywhere were enlarged and congested but were not hemorrhagic; the spleen was greatly enlarged, rather firm and cyanotic. No changes could be noted in other organs. The virus was again passed through another guinea pig which reacted typically and the strain was then dropped.

Still another test was made with the nymphs which remained. After an incubation period of five days the guinea-pig (739) showed a temperature of 105.3 F. and died six days later with characteristic anatomic changes. No ordinary microbes could be cultivated from the tissues. At least six nymphs had fed on the guinea-pig.

Larval Infection 4.—On July 10 about 2,000 normal larvæ were placed with guinea-pig 659 and a few days later the animal was infected by inoculation. The guinea-pig died on July 21 and was replaced by another (688) which was infected similarly and died on August 2. A third guinea-pig (714) was introduced on this date, was inoculated on August 5 and died August 14. All three animals presented the course and anatomic changes of spotted fever.

The larvæ which had fed were collected and after hatching as nymphs 360 were placed with a normal guinea-pig (726), the nymphs being added as they moulted. None of the nymphs became attached for seven to ten days, and about ten days after feeding was discovered a course of fever began in the guinea-pig and the latter died in six days, showing the characteristic anatomic changes of spotted fever.

In a similar manner the nymphs of Larval Infection 6 killed two guinea-pigs successively (731 and 751), and the combined nymphs of Experiments 2 and 7 produced spotted fever in guinea-pig 674, which eventually recovered.

II. TRANSMISSION OF THE VIRUS FROM THE INFECTED FEMALE TO HER YOUNG, THROUGH THE EGG.

On hypothetical grounds these so-called heredity experiments were performed in two groups: First, certain females were exposed to infection before they were impregnated, by permitting them to feed on guinea-pigs which had been inoculated with spotted fever. This was done in Experiments 3 and 5. Second, the ticks of Experiments 4 and 6 had been impregnated before their infection was attempted. This course was pursued, since it has been suggested in the literature that failure in hereditary transmission may depend on the time of infection with relation to the impregnation of the female. After impregnation many of the ova begin to enlarge, and, if the female is provided with food, they become surrounded by a denser pellicle. Presumably a microbe could penetrate such eggs less readily than the more minute and more delicate, immature, ova or germ cells of the unimpregnated female.

In this instance, however, the point just discussed is not an essential one, since the most satisfactory results which I obtained involved females which were impregnated before their infection was attempted. Casual observation of the manner in which the eggs mature makes it clear why the conception mentioned is to a certain extent irrelevant in so far as the probability of infection of the eggs is concerned. If one exposes the viscera of a fully developed female, which is on the point of laying its eggs it is seen that only a small proportion of the ova have matured, *i. e.*, have reached the limit of size and the appearance which they habitually obtain before extrusion. Hundreds of smaller and still smaller ova are seen in the sac as one follows it back, a fact which makes it apparent that the eggs are matured *seriatim*, the food which is found in the greatly distended alimentary sac being gradually consumed in the meantime. Hence, even in the thoroughly ripened female one finds many minute and delicate ova which apparently would be susceptible to penetration.

None of the females used in these experiments was infected in the first instance. They were among ticks which had been collected from animals and from the woods during the search for infected ticks in nature, and each had fed on a normal guinea-pig for a period much longer than that required for the transmission of the disease.

If a female failed to enlarge after prolonged feeding and after the passage of abundant feces the result was considered as proof that she had not been impregnated.

It is not my intention to analyze all the experiments in detail at this time. In addition to reporting two positive transmissions through the egg, I may mention the fact that short courses of fever were produced by the larvæ in several instances, without the development of cutaneous phenomena. Immunity tests are still to be made with such animals, in order to determine whether these occurrences represented mild attacks of spotted fever.

The technic was similar to that used in the experiments termed Larval Infections, *i. e.*, the larvæ, as soon as hatched, were placed with normal guinea-pigs in tick-proof cages.

Both experiments concern Heredity Experiment 4, in which infection of the ticks took place subsequent to their impregnation; that is to say, the ticks were not allowed to feed on infected guinea-pigs until the character of their enlargement after feeding on normal guinea-pigs indicated that they had been impregnated. The rather scant supply of guinea-pigs rendered it impossible to prove the infectivity of all females before the eggs were laid. This was done in several instances, however, and all which were so tested proved to be infected. Concerning the two experiments to be reported, the infectivity of the larvæ is ample proof that the females had been previously infected.

The precaution was taken to perform the experiments in entirely new cages, so that the larvæ had no opportunity to come in contact with spotted fever virus other than that contained in the female parent.

Females 7 and 9 of Heredity Experiment 4 fed on four infected guinea-pigs from May 22 until June 14, and at this time they were ready for oviposition.

Experiment with Female 7.—This female was removed from an infected guinea-pig June 14; it began laying eggs June 27; hatching began on or about July 27. It was estimated that about 2,000 eggs were laid.

Beginning on July 30 the larvæ, as they hatched, were placed with a normal guinea-pig (707). Inasmuch as they do not feed for some days after hatching, immediate results could not be anticipated.

On August 22 or 23 the temperature of the guinea-pig rose to 104.5 F., the following day to 105.5 F., in the vicinity of which point it remained until the animal died August 28. The following notes were made at autopsy: The lymph glands are deeply congested and considerably enlarged and the surrounding areolar tissue is congested. The spleen is about twice its normal size, is fairly cyanotic and moderately firm, resembling the spleen of spotted fever when death occurs at an early stage. The kidneys are congested and degenerated, and the suprarenals are congested and enlarged. The appendages of the testicles show a good deal of congestion. There is no enlargement of the scrotum and no hemorrhages have occurred into it. (I have stated hitherto that these scrotal changes are sometimes missed when death occurs early.) Other organs appear to be unchanged.

Agar slants inoculated from the heart's blood, from the liver and the spleen, remained free from discoverable growth.

Two hundred and eleven enlarged larvæ were removed from the cage, hence this number at least had bitten the guinea-pig.

In order to verify the suspicion that this animal had died of spotted fever, an emulsion of its spleen and liver was injected into guinea-pig 746. The temperature of this animal was recorded as follows on successive days: 103.7, 102.7, 104.1, 105.5, 105.6, 105.4, 105.8, 105.3 104.8, 104 and 102.2 F. Death occurred on the fourteenth day following inoculation.

Autopsy Notes: Lymph glands are enlarged and deeply congested or hemorrhagic; spleen is greatly enlarged, cyanotic and fairly firm; kidneys are swollen and congested; the scrotum is greatly enlarged and intensely hemorrhagic, and the tunica vaginalis is deeply congested. No gross changes are seen in other organs.

The diagnosis of spotted fever was made positively.

Experiment with Female 9.—This female was removed from an infected guinea-pig June 14; it began laying eggs June 28; hatching began about July 28. Several hundred eggs were laid.

Beginning on July 31 the larvæ were placed with a normal guinea-pig (710) as rapidly as they hatched. Ticks were first seen attached after thirteen days and the first enlarged larvæ were removed on the fifteenth day. Ten or eleven days later the temperature of this animal rose and continued within the limits of 104.3 and 105.3 F. for seven or eight days. Following this the fever subsided and the animal recovered. Slight enlargement of the scrotum after several days of fever was the only condition, aside from the temperature, which suggested spotted fever.

Inasmuch as in some other animals in these experiments the disease had run a similar course, with eventual recovery, it was suspected that the condition represented a mild attack of spotted fever. In order to decide this point if possible, 3 c.c. of blood were drawn from the heart of guinea-pig 710 during the height of fever and injected into a normal guinea-pig (749). The following course of the temperature in this animal was observed on successive days: 102.4, 103.4, 103.4, 105.6, 104.8, 106.7, 106.4, 106, 104.6, 105.4, 104.4, 104, 104.2 and 103.5 F. The guinea-pig recovered. On the fourth day the scrotum began to swell, and on the tenth day the swelling was extreme and extensive hemorrhages had appeared. With recovery the hemorrhagic areas in the scrotum became gangrenous, and following separation of the sloughs a deformed and cicatricial scrotum remained.

A positive diagnosis of spotted fever in this animal was made, and the diagnosis was confirmed later by a severe immunity test, in which no reaction occurred.

Approximately two hundred larvæ had bitten guinea-pig 710.

The results of these two experiments prove, without question, that the virus of spotted fever may pass from an infected female to her young through the egg. The practical importance of this fact will, to a certain extent, depend on the viability of the virus in larvæ which have been infected in this manner; this is to say: Will such ticks be infective in their subsequent nymphal and adult stages? Although one probably should not try to forecast results, the positive results which I have obtained in infecting normal larvæ and nymphs suggest that larvæ which have acquired their disease through the egg will also prove infective when they have reached the adult stage. This suspicion is particularly well founded since the process of moulting does not destroy the infection in either the larva or the nymph.

II. THE INFECTIVITY OF THE SALIVARY GLANDS AND THE ALIMENTARY SAC OF THE DISEASED TICK.

I wish to report a single experiment in which the salivary glands and the alimentary sac of an infected male tick (No. 15) were dissected out and injected separately into normal guinea-pigs. Male tick 15 had been infected by feeding on a diseased guinea-pig and its infectivity was proved on normal guinea-pig 677.

One can not well remove the alimentary sac without contaminating all other viscera with its contents. On the other hand, one can grasp a salivary gland with forceps near the excretory orifice and, after a little careful dissection, remove the entire gland without rupturing it.

Hence in this experiment the salivary glands were removed first and without rupturing the alimentary sac, after which the latter was removed without regard to remaining structures. The glands and the sac were then triturated separately in sterile salt solution and injected,

the salivary glands being inoculated into guinea-pig 683 and the alimentary sac into 694.

From the date of inoculation, July 15, the following record of the temperature of guinea-pig 683 was made on successive days: 104, 102.4, 102.3, 105.7, 105.7, 105.8, 105.9, 105.1, 105.4, 105.4, 104.1, 103.2, 102.1, 102.6, 102.7 F., etc. There was eventual recovery. Four days after inoculation the scrotum began to swell and on the seventh day it was extremely hemorrhagic and enlarged. On recovery the hemorrhagic areas sloughed. The course of fever and scrotal changes in guinea-pig 684 were similar, though not so extreme.

On August 8 both animals were given immunity tests with three cubic centimeters of infected blood, a quantity which contained from thirty to sixty minimum pathogenic doses. Neither animal showed any reaction to the second inoculations.

In a repetition of this experiment two ticks should be used, the salivary glands being taken from one and the alimentary sac from the other.

It seems probable that the virus passes from the alimentary sac of the tick to the salivary glands; possibly this can be determined experimentally. Indeed, since the oviducts and the eggs of the female are invaded, at least in certain instances, it is not unlikely that spotted fever exists as a generalized infection in the tick for a greater or less period. Whether it eventually becomes localized in certain organs is a question for future investigation. However this may be, the disease is often, if not always, a comparatively harmless incident for the tick.

SUMMARY.

I have established the following points concerning the relationship of the Rocky Mountain woodtick to the spotted fever of western Montana:

1. Infected ticks exist in the so-called infected districts in nature.

2. Both the adult male and the adult female may acquire the disease by feeding on an infected animal, and may transmit it to a normal susceptible animal for a period of several weeks thereafter.

3. During either of its intermediate active stages, larval or nymphal, the tick may acquire the disease in the same manner, retain it during moulting, and prove infective when it reaches the subsequent active stage.

4. The infected female may transfer the disease to her young through the egg. It is possible that this does not happen in all instances, and it is quite certain that the brood of an infected female may include many uninfected larvæ. This seems to have been proved in three of my experiments in which the infectivity of the females had been proved before oviposition; the larvæ in these experiments failed to infect normal guinea-pigs.

5. The virus exists in both the salivary glands and the gut of infected ticks at a certain time, and since it also invades the generative organs of the female the condition is probably one of a generalized infection, at least for a period. The disease is not highly destructive for the tick.

At least two important steps may now be taken in an aggressive fight against the disease: First, a thorough dissemination of the knowledge that the tick is the agent of infection; second, a massive reduction of the number of ticks in infected districts by means now used in the destruction of the cattle-tick of the southern states. Extermination of the tick in the mountains will not be possible so long as native wild animals inhabit the soil and roam the hills. On the other hand, it is known locally that the number of ticks in the Bitter Root Valley has increased enormously as greater numbers of domesticated animals have been introduced, and the latter now seem to be the chief hosts for the tick.

Special Article

TRAVEL NOTES FROM SOUTH AMERICA.

NICHOLAS SENN, M.D.
CHICAGO.

III. *THE MEDICAL PROFESSION, MEDICAL SOCIETIES AND MEDICAL JOURNALS OF RIO DE JANEIRO.

The South American physicians are men with excellent preliminary education, as a college degree is one of the requirements of entrance exacted by the medical schools, and during their six years of training as students of medicine these men acquire a good knowledge of their profession. After graduation, many of them spend a year or more as assistants in hospitals, where they become familiar with the practical work of their future careers. Some of them, after graduation or expiration of their hospital service, go to some of the larger medical centers in Europe, most frequently to Paris, in quest of more knowledge before they assume the responsibilities of an independent practice. On the whole, the physicians here occupy a much higher position in the esteem of the public than in our country. They are influential members of the community in social and public affairs and occupy many positions of trust and influence. Rio de Janeiro is well supplied with physicians; the population as given by the last census is less than 700,000, and I counted the names of 735 physicians in the city directory; that is more than one physician for every thousand inhabitants.

Young men seem to take kindly to the study of medicine. The present number of medical students, considering the small population of Brazil, is unusually large. They are distributed as follows: Medical School of Rio de Janeiro, 1,700; Medical School of Bahia, 500; Medical School of Rio Grande do Sul, 175; total, 2,375. This means that the medical profession of Brazil will be more crowded in the future than it is now. Brazil offers no inducements for foreign practitioners. A foreigner, in order to obtain a license to practice, must be a graduate of a recognized medical school and must pass a satisfactory examination in Portuguese or Latin before a committee selected from the faculty of the Medical School of Rio de Janeiro. The existing overcrowded condition of the medical profession and the stringent requirements for obtaining a license have kept out physicians from foreign countries, as there are very few in Rio de Janeiro, Santos and Petropolis. I was given to understand, too, that the wealthy and influential Brazilians and Portuguese show a decided preference for the physicians of these nationalities and place little confidence in outsiders. Most of the physicians have offices in the business part of the city, but are not congregated together in large buildings, as in Chicago and other western cities. The fees, on the whole, are higher than in our country, but are regulated rather by the reputation of the practitioner, than by an established fee bill. Physicians who are well known, especially the professors in the medical colleges, command large fees, but the mass of the profession here, as everywhere else, is underpaid for its work.

The physicians whom I met were courteous and obliging, anxious to give a good insight into their work and the merits of the institutions which they represented. Here I must make special mention of Dr. Alvaro Ramos, 76 Rua de Hospicio. I met him last year in Lisbon at the meeting of the International Medical Congress. When the director of the Misericordia Hospital showed us through the institution, we met him accidentally in one of the wards. The meeting was as hearty

* This series of articles was commenced September 14.

and cordial as it was unexpected. He left his work for two days and during that time was my constant companion and guide. His wide acquaintance with the profession, and his familiarity with medical institutions, enabled me to see much and obtain much information in a short time. He is one of the attending surgeons of the Misericordia Hospital and the operating surgeon of the National Insane Asylum. He spent last year in Germany; he speaks French and German fluently, and is one of the ablest and most progressive surgeons of the city.

Although the Medical School of Rio de Janeiro has a dental department, American dentists are most in demand, and all of them enjoy lucrative practice. Dr. Fordham, a graduate of a Philadelphia dental school, has undoubtedly the largest practice. He employs three assistants and for his own work he charges $13 an hour. American dentists must pass an examination in Portuguese, but the ordeal is not a trying one. There is no dental society in Brazil. Rio de Janeiro has four women physicians and Bahia two, who receive their fair share of patronage, especially in childrens' diseases and gynecology.

RIO DE JANEIRO ACADEMY OF MEDICINE.

The Academy of Medicine of this city is a very select and dignified organization of the most prominent medical men. The membership is limited to one hundred active members and a limited number of honorary members, most of whom reside in the city. Except during the four summer months, the meetings are held every Thursday evening and the transactions are published in the *Annales de Academia de Medicina do Rio de Janeiro*, founded in 1829. The academy owns the building in which the sessions are held. The Medical Society of Rio de Janeiro has a much larger membership and represents the interests of the bulk of the profession. The Brazilian Medical Society or Congress will hold its next meeting in the city of Sao Paulo, September 6. The International Medical Congress of the South American Republics will meet next year in Rio de Janeiro. Dr. Sobré, professor of medicine in the Medical College of Rio de Janeiro, is president of the Brazilian committee for the Buda-Pesth International Medical Congress.

MEDICAL JOURNALS OF BRAZIL.

The principal medical journals published in the Republic of Brazil are the following: *Brazil Medico*, Rio de Janeiro, edited by Professor Azevedo Sobré; *Revista Medicina de Sao Paulo*, St. Paul, edited by Dr. Victor Godinho, and *Gazeta Medica du Bahia*, Bahia, edited by Professor Silva Lima. A large number of small medical journals are published in the different parts of the country and as most of them are interleaved with all sorts of advertisements printed on colored paper, they evidently depend on the advertisers and not on *bona fide* subscribers for their origin and existence. It is very desirable that The Journal A. M. A. should cultivate a better acquaintance with the high-class medical journals of South America and bring to its readers more of the splendid scientific work of the many earnest students and investigators of the South American republics.

Rio de Janeiro, July 28.

(To be continued.)

Appreciation.—In a breezy address on medical journalism, which is reproduced in the *Cleveland Medical Journal*, September, 1907, Samuel W. Kelley, M.D., gives his opinions as to the thanklessness of the editor's task and the lack of appreciation of his work. Of one phase he expresses himself as follows: "But the most complacent and the most thank-empty is the contributor whose articles you have spent a night or two in rewriting, correcting his alleged facts and his diction, clearing up his histories, rearranging his argument, until you wonder if he will recognize in its metamorphosis the hodge-podge he sent you. Does he acknowledge? Not he! He tells his admiring friends that if he could only spare a half-hour from practice now and then he would dash off such little things frequently. He dictated that one to his stenographer while he ate his breakfast, but she failed to catch it all."

Clinical Notes

LIGATION OF THE PULMONARY VEIN.

AN EXPERIMENTAL OPERATIVE PROCEDURE IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

GROESBECK WALSH, M.D.
District Physician Isthmian Canal Commission.
LAS CASCADAS, CANAL ZONE.

In the autumn of 1900 and the early winter of 1901 I began a series of animal experiments with the idea of establishing the ligation of the pulmonary vein for the relief of pulmonary tuberculosis as a regular surgical procedure. The experiments were performed in the anatomic laboratory of the Northwestern University Medical School with the cooperation of Dr. Edward Clark Streeter of Chicago. A dozen or more dogs were used and the mortality rate was 100 per cent. This would seem to preclude absolutely the right of this operation to exist, and yet I believe the failure was due to causes which might have been obviated had the anatomic difficulties of the operation been more clearly understood at the time.

The operation suggested itself when I first heard in a medical clinic of the great infrequency with which pulmonary tuberculosis and mitral insufficiency are associated. The idea of producing an artificial hyperemia in the lung occurred at once, and simultaneously with it the impossibility of creating a valvular defect for this purpose, even were such a proceeding desirable. On going over the ground, ligation of the pulmonary vein remained as the only logical operation. It was the intention to produce a tuberculous process in a dog's lung and then test the curative powers of an artificial hyperemia. But before operating under these conditions it seemed desirable, to say the least, to test the practicability of ligation of the pulmonary vein on a normal dog. This we proceeded to do. Throughout our experiments the technic used was identical. A horse-shoe shaped incision with its curve downward was made on the left side of the sternum through the pectoral muscles. Two or more ribs were resected and the flap swung upward on the hinge of intercostal muscles. The upper branch of the pulmonary vein was hitched up into the wound with an aneurism needle and ligated with fine silk. At first the greatest stumbling block was to identify the blood vessels and to decide which was a branch of the pulmonary vein, but with the postmortem experience which we quickly gained this difficulty was obviated. Our dogs all died on the table. Two or three lived until the wound was closed, but they were the exceptions. Their deaths were ascribed by us to many reasons, but like many other older and wiser operators we relied strongly on "shock."

Several years later I read in Ricketl's book on the experimental surgery of the thorax that the pleural cavities of the dog are, indeed, only one great cavity, both lungs of the dog collapsing as soon as one side of the chest is opened. This explained to my satisfaction our long series of fatalities which before had been so hard to understand.

Our experiments were brought vividly to my mind recently by an abstract in the *Medical Record* describing an inhalation mask devised by Kuhn with the object of producing an artificial hyperemia and to be used in the treatment of pulmonary tuberculosis. Ligation of the pulmonary veins with all its difficulties appears to me as a proceeding far more likely to produce results. One

must have observed during the last few years the constantly widening horizon which the Bier treatment is attaining, and its extension to the problem of pulmonary tuberculosis in one way or another can only be a question of time. Having borne the burden of the day, I desire at any rate to establish the priority of this operation for the purpose described, though for my own part opportunities for the elaboration of this idea have for the time being disappeared.

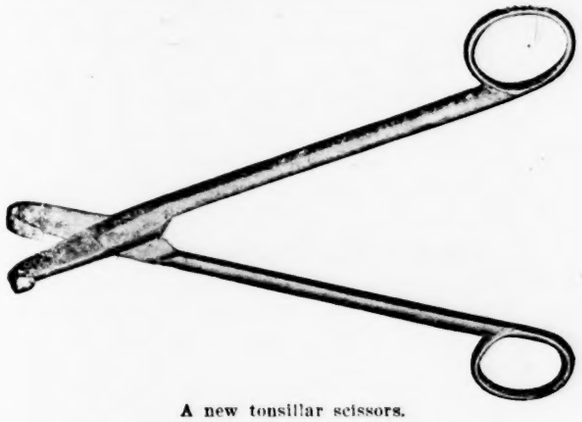
Indeed, it has often been a matter of regret that when time and opportunity afforded, ligation of a venous trunk as a curative measure in an artificially produced tuberculosis was not first tried on an encapsulated organ, such as the testicle or kidney, in which the immediate difficulties are not so great and where we might have gone a step or two at least on our way.

A NEW TONSILLAR SCISSORS.*

CULLEN F. WELTY, M.D.
SAN FRANCISCO.

The difficulties I have encountered in the radical removal of the tonsil are many and, in order of frequency, may be enumerated thus:

1. Difficulty in removing the whole of the tonsillar mass.
2. Wounding the pillars, which has happened to me twice.
3. Wounding the uvula, which has happened to me once.
4. Difficulty of controlling severe hemorrhage by ligature and tampon, which I have not had to resort to. In



A new tonsillar scissors.

several instances I have had to use the tonsillar forceps to control hemorrhage. The cases where the tonsil has not been entirely removed are the ones that have given me trouble from hemorrhage, and I believe the remaining tonsillar tissue is largely responsible for the hemorrhage.

By the use of the U-shaped scissors (see illustration) three of these difficulties can be eliminated and the remaining one, that of hemorrhage, very much lessened. However, any one attempting radical removal of the tonsil should be prepared to do any of the various surgical procedures for the relief of dangerous hemorrhage.

The tonsil should be grasped by an angular mouse-tooth forceps just as it emerges from the upper fold of the mucous membrane and drawn well into the mouth, and the mucous membrane be cut at this place just after it severs its connection with the tonsil. From this point blunt or sharp instruments are inserted to sever adhesions and mucous membrane from the anterior and posterior pillars. The mucous membrane sacrificed need be only that part that is already adherent to the tonsil. Tension should be continued on the tonsillar tissue and the scissors applied so that the flat surface rests against the posterior pillar. They should be pressed well with n the cavity, as they can do no harm, and the whole of the tonsillar mass removed. It is always necessary to see that the entire tonsillar tissue has been thoroughly removed. If not, the remaining part can be grasped and made taut by the forceps and the scissors applied with pressure. The result is a nice clean surface. This can be repeated as often as necessary. This instrument is especially devised for buried and adherent tonsils. Large tonsils will have to be taken away in parts. This operation can be done with cocain or general anesthesia. The parts can not be sufficiently cocainized to make it an absolutely painless operation.

2510 Washington Street.

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

A MINIATURE DARK ROOM FOR THE VON FLEISHEL HEMOGLOBINOMETER.

L. S. PETERS, M.D.
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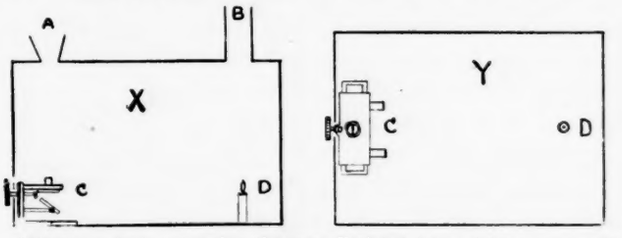
SILVER CITY, N. M.

Being without a dark room in which to use the hemoglobinometer, I devised a simple box that makes a satisfactory substitute. Nothing new is claimed for it, as I suppose there are any number of ways of overcoming this difficulty, but the suggestion is given for the benefit of many physicians who are also without dark rooms.



Minature dark room for the von Fleishel hemoglobinometer: X, side view; Y, view from above; A, cone-shaped opening for taking reading; B, chimney; C, instrument in position; D, candle for illuminating.

The box is made of tin and is ten inches long, six inches high and seven inches wide. In the cover is a chimney (B) to carry off the heat and smoke from the candle (D) which is used for illuminating purposes. In one end is placed the hemoglobinometer (C), the milled head of the setscrew projecting through the end of the box, permitting adjustment from without. In front of this at the other end of the box the candle is placed.

The reading is made by looking through a cone-shaped opening (A) in the cover. The illustration (X giving a sectional view from the side and Y a sectional view from above) will make clear anything the description has failed to bring out.

Value of the Roentgen Ray.—W. B. Cutts, in the *Providence Medical Journal*, states that the Roentgen ray, as a therapeutic agent, is not a panacea nor a miracle worker, but in the hands of a competent, properly trained, experienced operator it is, for certain well-defined diseases and conditions, one of the most valuable therapeutic agents we possess.

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[For other information see second page following reading matter.]

SATURDAY, OCTOBER 12, 1907.

THE TARSOPHALANGEAL REFLEX.

In 1901 von Bechterew, of St. Petersburg, described a normal reflex, which consists in a dorsal flexion of the second and third or second to fifth toes when the dorsum of the foot in the region of the cuboid or external cuneiform bone is lightly tapped. This reflex is supposed to be due to a direct stimulation of the extensor muscles (longus and brevis) of the toes. Von Bechterew pointed out that in patients suffering from certain organic brain lesions this reaction is absent and in its place is seen a plantar flexion of the same toes. Three years later Mendel, of Berlin, whose name is frequently associated with this reflex, described the same phenomenon and expressed the opinion that the significance of plantar flexion is the same as that of Babinski's sign, that it indicates some central organic lesion of the motor nervous system, and may be utilized to differentiate functional from organic disturbances, or to determine which side is affected if the patient is unconscious. Lissman[1] has further shown the connection between this reflex and Babinski's sign by demonstrating that infants, who normally present a positive Babinski, also exhibit a plantar tarsophalangeal reflex, and that the two normally disappear at about the same age.

It has been stated that this new foot reflex can never be elicited except in patients who also present a positive Babinski, but evidence to the contrary seems to be accumulating. To the eighteen instances cited by Mendel, Meyer[2] adds a report of ten, making a total of twenty-eight patients suffering from various organic lesions of the cord or brain who exhibited well-marked plantar flexion of the toes, while the Babinski sign was very doubtful or altogether absent. A number of these patients later developed a Babinski reflex, and in at least one instance the presence of a positive tarsophalangeal reflex was the deciding factor in diagnosing a doubtful case, which later developments proved to be an organic disease. While this sign is not present in every case in which it might be expected, its occurrence is of great significance, and occurring, as it occasionally does, before Babinski's sign may be elicited, it will doubtless prove of great value in the diagnosis of early spastic palsies.

In some normal individuals, there is neither a dorsal nor a plantar flexion on striking the back of the foot, and, as would be expected, the same is true of patients having certain diseases such as multiple neuritis or anterior poliomyelitis. In some cases of tabes dorsalis, syringomyelia and cerebellar tumor no response has been elicited.

The reflex may be brought out most satisfactorily by resting the inner surface of the leg and foot on a firm support, the knee being bent, and tapping over the head of the third or fourth metatarsal or the cuboid or external cuneiform bone with a percussion hammer. Edema or adiposity may interfere materially with the result, and this reflex is subject to the same influences that inhibit or augment the other deep reflexes.

1. Münch. med. Wochschr., 1907, No. 21; abstracted in THE JOURNAL, Aug. 10, 1907, p. 529.
2. Berlin klin. Wochschr., 1907, No. 34.

MEDICAL RESEARCH SUPPORTED BY TAX ON FIREWORKS.

For some years THE JOURNAL has shown the widespread danger and damage to life and limb resulting from the use of fireworks in celebrating the Fourth of July. It has given its readers a formidable array of facts and figures to demonstrate the enormous and needless slaughter attendant on our "insane" observance of the Fourth. The public press has noted this work of THE JOURNAL and has cooperated in it in many ways. Prominent among the papers which have assisted is the *Chicago Tribune,* and in a recent issue is an interesting suggestion by Mr. Edward Manley, a Chicago citizen.

According to the *Tribune,* Mr. Manley has suggested to President Roosevelt that in his next message to Congress he should recommend an internal revenue tax on fireworks, certain forms of Fourth of July ammunition, and other explosives not used in industries, the proceeds of this tax to be devoted to the investigation of tetanus and other diseases which have heretofore baffled medical science.

It is to be hoped that President Roosevelt will accept the suggestion. Liquors and tobacco already contribute to the support of the government by the revenue tax levied on them, and nearly every argument for taxing liquors and tobacco applies to the proposed tax on fireworks. Good governments have always sought to make the burdens of taxation fall more heavily on the luxuries than on the necessities of life; and if fireworks are to be classed as anything but a nuisance it must be as a luxury. Such a tax would be eminently fair, for any person who does not wish to pay it is free to do without fireworks. The proposed tax would be easy to collect, as a revenue stamp could be attached to each cannon cracker, rocket, box of blank cartridges and package of firecrackers.

As a test of actual patriotism, such a tax is unexcelled. Under the proposed law, every dollar would buy, let us say, fifty cents' worth of fireworks for the "patriot," and would make a present of the other fifty to our

good Uncle Sam. And even then the prices of fireworks would be no higher than they were a generation ago and not half so high as they ought to be.

While it is true at present that the government needs no such contribution, it is equally true that the government is apparently unwilling to appropriate money to investigate the diseases resulting from Fourth-of-July injuries and a host of other diseases that might be investigated on the money raised by the tax suggested. The government has been criticised, and justly, for having spent more in trying to eradicate hog cholera than in attempting to discover a preventive for consumption; for having devoted more time and money to the boll weevil and wheat rust than to cancer and tuberculosis. Why should it turn a deaf ear to the cries of its suffering citizens while it reduces the mortality among cattle and hogs?

It is a proper function of government to undertake such useful enterprises as involve expenditures beyond the resources of individuals or corporations; especially is it a function of government to undertake things which are demanded by the public weal, but which can be conducted only at a loss. Such work would be the proposed investigation of disease with funds obtained by the proposed tax.

Let the "patriot" help undo a part of the harm which he works; let us have a tax on fireworks.

THYROID TUMORS OF THE TONGUE.

In many of the text-books on pathology, especially the older ones, the definition of tumors contains a clause stating that they do not perform any function. Since the internal secretion of the organs and tissues has been better understood it has become apparent that under certain conditions tumor cells may secrete substances similar to those secreted by the original tissues from which they have arisen, and which may be of use to the organism. This is particularly true of tumors derived from the thyroid, which frequently secrete colloid, containing thyroiodin, and which has been known to compensate successfully for loss of the thyroid. Of special interest in this relation are those tumors which arise at the base of the tongue from the remnants of the thyroglossal duct, which is the embryonic source of the middle lobe of the thyroid.

Ungermann[1] has collected thirty cases of this form of tumor reported in the literature, but this number falls considerably short of the real total, for several cases in the American literature have been omitted. There are three possible ways in which tumors containing thyroid tissue may arise at the site of the thyroglossal duct, of which the most common seems to be the failure of the lower end of the duct to be drawn down to the normal location of the thyroid, so that the median lobe develops at the base of the tongue instead of in the usual situation. Another possibility is that the residual portion of the duct may retain the power to form thyroid tissue, which it may proceed to do when the thyroid becomes incompetent from any cause, thus furnishing accessory thyroid tissue of great value to the individual. And in still another group of cases there occurs a total or nearly total failure of development of a proper thyroid, but the stimulus seems to be expended in causing a hyperplasia of the remnants of the thyroglossal duct, which results in the formation of a tumor at the base of the tongue which may or may not contain typical thyroid tissue. In these cases death generally occurs in infancy with the evidences of fetal myxedema.

The most interesting feature of these tumors lies in relation to their functional capacity and the evidence which they furnish concerning the independence of the parathyroids. In a number of the cases the tumor has been removed by surgeons because of the difficulties it caused in swallowing, or even in breathing, and in several instances myxedema has followed, indicating that the tumor represented a compensatory formation of accessory thyroid tissue which functionates in place of the defective thyroid gland. It is probable that in those cases in which myxedema does not follow removal of the lingual tumor, the growth represents an undescended median lobe of the thyroid, the removal of which is compensated by the lateral lobes.

In the third class of cases, in which there is a total or nearly total failure of formation of normal thyroid tissue, the lingual tumor offers a compensatory relief in proportion to the extent that it contains thyroid tissue capable of secreting colloid; if this is small in amount death occurs in early infancy, if larger the child may develop into a typical cretin and live for several years. In any case, however, it has been regularly found at the autopsy, if proper search is made, that the parathyroids are present and in apparently normal condition. This last observation affords most conclusive evidence that the parathyroids are embryologically distinct from the thyroid and functionally independent, their presence not being able to prevent the development of either fetal myxedema or cretinism.

1. Virchow's Arch., 1907, vol. clxxxvii, p. 58.

THE PHYSICIAN IN POLITICS.

During the past decade various physicians have urged on medical men the duty of taking an active interest in politics. In addresses and writings, Roberts of Philadelphia, Reed of Cincinnati, and Ellis of Los Angeles, to mention only a few of those who have made a practice of their preachments, have spoken with force, albeit with dignity, on this subject. On the other hand, many oppose political activity by physicians. They argue that the physician follows a profession which in itself is all-absorbing and to which, if he would best serve his patients, all his energies, mental and physical, should be devoted; that it is, to an extent, degrading to enter the political arena and to come in close contact with

those who are engaged in "practical politics," and that to attempt to use medical organizations to further or to secure political ends is to degrade them to the level of political machines—justly in great disfavor.

In this instance, however, we are not discussing "practical politics," which may be defined as a game played for profit, for the aggrandisement of the individual, the only object of which is to win, no matter by what means. What we are considering is politics in its broadest sense—the art or science of government. This is the meaning that Roberts has in mind when he demands that physicians fulfill their duty and take an active interest in politics, and then goes himself to the primaries, goes to the election booth as an inspector, and spends many irksome days striving to do away with crookedness and political crime. This, too, is the meaning applied by Ellis when he, too, calls attention in no unmeasured words to the duty of our profession to interest itself in politics, and then devotes two or three years of hard, and often unpleasant work, to taking the public school system of Los Angeles out of the reach of political grafters. Surely when these and other earnest men demand that we as physicians busy ourselves with the government of town, city, state or nation, and proclaim it our duty to be active in politics, it is the "art or science of government" they mean.

The professional man is, consciously or unconsciously, always busied with problems in sociology and is led into paths of study of cognate sciences. Any physician, for instance, will appreciate the direct result of typhoid contamination of water supply, not alone as it concerns morbidity, but also in its economic aspects as it affects the commercial activities of the community or the direct monetary loss. What percentage of laymen, taken at large, would have any clear idea of either of these questions? Nearly every state has particular industries which are profitable to its citizens and on the safeguarding of which it spends large sums of money. Yet how many states are there that spend or appropriate even a bare pittance of the money which we, as physicians, know should be expended in safeguarding the health and lives of its citizens?

With the improvement of medical organization which has grown so rapidly since 1900 several state organizations have undertaken to secure improved laws regulating the practice of medicine. Almost in every instance, and at the first effort, has come the knowledge that lawmakers have an immense and almost unlimited ignorance of public health matters and of medical sociology in general. Hence we find that the publications of many state medical organizations have been agitating the necessity for the members of their respective associations taking an active and not a passive part in politics—"the art or science of government."

The principles of preventive medicine are so deeply rooted into the very life of the physician that in asking for public health legislation it seems absurd to him to have his motives questioned. But he overlooks the fact that the lawmaker, through practical experience, comes to regard nearly every piece of proposed legislation as having some ulterior object behind it, or as being intended for some particular and generally selfish purpose. With the potential strength of our profession it is not necessary to go down into the gutter and do "dirty politics" in order to protect the public from harm, as some have preached. Governor Hughes of New York has demonstrated that it is only necessary to put any great truth directly before the people and they may safely be trusted to turn down the "dirty politician" and force him to do the right thing or get out. To take an active interest in "the art or science of government" it is only necessary to appeal to the awakened intelligence of the people. It is the appeal to the people, to the popular intelligence, to the reasoning power of the individual, that will count for much if the physician will undertake that neglected portion of his civic duty which is concerned with "the art or science of government."

THE LAW OF AGENCY—A COMPARISON.

Invidious comparisons have been made at times between the courts of the United States and those of other countries. It is especially common to draw the deadly parallel between our courts and those of our northern neighbor, to our great disadvantage. Sometimes, however, the advantage is with us. Not many months ago the Toronto Street Railway Company was sued by a member of the medical profession for services rendered, in an emergency, to an employé of the company.[1] A druggist, into whose store the injured man was carried, called in the physician who, having had some previous experience with the company, at once telephoned to the head office of the company as to the course to pursue. The person answering the telephone informed the physician in behalf of the street railway company that the company would hold itself liable for the payment of the fee. When the bill—a moderate one—was rendered the company offered to pay a merely nominal fee in settlement. This was refused and suit was brought. The judge sustained the company in its defense that the general manager was the only official who had the power to bind it by a contract and the general manager had not been called. When asked whether, under circumstances such as made it impossible to get the general manager, the man should be allowed to die, he is said to have replied: "Certainly, from a legal standpoint there is nothing else to do; morally it may be different." In a similar case occurring in Nebraska the Supreme Court of that state has recently rendered a decision[2] that is directly opposed to that given by the Division Court of Toronto. The Nebraska court holds that in emergency cases of this nature any general officer of the company then present may engage medical or surgical service and bind the company for a reasonable fee therefor. In case no general officer is at hand the "person highest in authority then present may bind the

1. Canadian Practitioner and Review, April, 1907.
2. See Medicolegal Department, this issue, page 1307.

company for such services as the emergency demands." That the decision of the American court is to subserve the best interests to public policy, no one can deny. The Canadian court may have administered good law, but, from the standpoint of those not used to the legal perspective, its decision seems to have sacrificed public good to corporate greed. In the one we have the apotheosis of the legal technicality—in the other the exaltation of the spirit of the law.

THE INSANITY PLEA IN CRIMINAL TRIALS.

Those who think that the insanity plea as a defense is overdone at the present time will probably be surprised to learn that it has been available where English law has prevailed for only a comparatively short period. Up to nearly the middle of the last century, in England, prisoners tried for felony were not allowed counsel, and the anomaly, shown up by Sydney Smith, of requiring an insane man to prove his own insanity at the time of the commission of the crime was in full force in English law. This fact is brought out in a recent paper by Dr. James Hendrie Lloyd, in the *American Journal of Insanity*, who reviews the history of the English law as it concerns the insane accused of crime, and it is easy to see how near to the truth must have been the —what seems at first sight excessive—estimate of the number of judicial murders committed that was made by a distinguished British authority of that period. It is difficult to see how such a law could have stood so long unchanged; no insane man could escape the gallows unless his insanity was so obvious that no average jury could entertain a doubt of its existence, and even then it might not avail to save him. Notwithstanding the present humane tendencies of our times, judicial murders may still occur, even in this country, when public opinion is excited, as our past records have shown, in more than one instance. There is no doubt that the popularly called "insanity dodge" is overused at the present time, but it is a question whether more insane persons are not convicted than sane persons escape by it, in the ordinary practice of our courts, and this in spite of the fact, as Dr. Lloyd says, the prisoner and his counsel are allowed every latitude. The miscarriages of justice work both ways, and while some escape who should be punished, others who should have the mitigating fact of their mental deficiences considered receive the full penalty of the law. It must be admitted that in a certain rough way justice is often done and society is protected by the conviction of a criminal who can not be considered as mentally perfectly normal. The idea that insanity excuses everything may come to be obsolete in legal practice, for it can not be denied that a certain degree of responsibility is perfectly compatible with some forms of mental derangement. When it comes, however, to the taking of human life as a penalty for crime there should be no question as to its injustice in such cases, at least if ethical considerations are to govern our administration of justice. Probably no more humane and effective adaptation of ethical considerations to the administration of justice has been evolved than the successful St. Louis plan, to which we have referred editorially,[1] of a permanent commission of alienists to examine, before trial, all criminals concerning whose sanity any possible question can be raised on trial. While, of course, in its present tentative form such a commission could not avail definitely to decide the question and exclude it from becoming an issue before the court, the experience of over two years' trial demonstrates its influence as a preventive, inasmuch as, in no single instance, we understand, has the report of this commission been challenged by either the prosecution or the defense. There is good ground for hoping that the further development and a wider extension of this principle will do more to minimize the possibility of miscarriages of justice, both for and against the accused, and to eliminate the waste of time and money that the frequent introduction of the plea of insanity in criminal cases entails, than any measure that has yet been adopted in judicial procedure with regard to the insane.

WHAT IS A "COMPETENT" PHYSICIAN?

An amendment to the penal code was recently introduced into one of the state legislatures making it a felony to have in charge the care, custody or control of a sick or disabled person without providing him with "the attendance of a competent, licensed physician." The physician must be not only licensed but "competent." We wonder on what grounds is the layman, when engaging a physician, to satisfy himself as to the latter's competency, if his license may not be taken as sufficient presumptive evidence thereof? And who is to decide subsequently if things turn out unfortunately, whether the licensed physician was competent or not? And how is the responsibility of the person who engaged him to be determined for not discriminating between a merely licensed and a competent physician? But exactitude in phraseology appears to be as little regarded in matters medical as apparently in matters legislative. Words, most people seem to think, have no rights. Nevertheless they take their revenge for the indignities put on them by the frequent misunderstandings to which their misuse gives rise, and in the opportunities they afford to disingenuousness to quibble. In legal matters there is some benefit therefrom accruing to one person at any rate—the lawyer. But in medicine no one benefits, not even the physician.

Medical News

CALIFORNIA.

Epidemic Diseases.—The deaths from communicable diseases in August in the state were as follows: Typhoid fever, 47; diphtheria, 29; whooping cough, 16; measles, 14; malarial fever, 9; plague, 6; scarlet fever, 5; and all others, 10.

Typhoid Fever.—It is reported that there are 16 cases of illness at Sugar Pine Mills, 8 of which have been pronounced to be typhoid fever, while the nature of others is as yet undetermined. The source of infection is said to be milk supplied by a Chinese dairyman.

Unlicensed Practitioner Fined.—G. W. White, Pasadena, charged with practicing medicine without a license, was given a hearing September 17 before a justice of the peace, and is said to have been found guilty and fined $200. The prosecution in this case was at the instance of the State Medical Board.

1. The Journal A. M. A., July 13, 1907, page 151.

Health Officers Meet.—The fall meeting of the California Public Health Association is to be held in Woodland, October 25. The pure food law and its enactment will be discussed by Professor Jaffa, director of the pure food laboratory; Dr. Henry B. Wright, San José, will have a paper detailing the experiences of public health officers, and Dr. C. C. Brown will deliver an illustrated lecture on tuberculosis.

Vital Statistics.—During August, 2,501 deaths were reported, equivalent to an annual mortality rate of 14.7 per 1,000. Among the principal diseases causing death were: Tuberculosis, 367; diseases of the circulatory system, 346; violence, including suicide, 313; diseases of the digestive system, 285, 199 of which were of infants under 2 years of age; diseases of the nervous system, 233; diseases of the respiratory system, 163.

Personal.—While cranking his automobile, September 23, Dr. Edward N. Ewer, health officer of Oakland, fractured his right forearm.——Dr. C. W. Bryant, Redding, was thrown from his buggy near Shingletown recently and fractured his thigh.——Dr. Samuel E. Simmons, Sacramento, has returned from Europe.——Dr. Henry H. Hart, San Francisco, who has been seriously ill, is reported to be out of danger.——Dr. Wallace I. Terry has been appointed chief of the Emergency Hospital service of San Francisco by the Board of Health, vice Dr. Charles B. Pinkham, who has been appointed emergency surgeon.——Dr. Carl P. Jones, San Francisco, who has been ill with plague, is reported to be convalescent.

CONNECTICUT.

Infectious Diseases.—During August 37 cases of measles were reported in ten towns; 48 cases of scarlet fever in 27 towns; 4 cases of cerebrospinal meningitis in 4 towns; 62 cases of diphtheria in 26 towns; 28 or more cases of whooping-cough in 13 towns; 221 cases of typhoid fever in 46 towns, and 64 cases of consumption in 27 towns.

August Deaths.—During August, 1,756 deaths were reported, 240 more than for July, 106 more than for August, 1906, and 320 more than the average for August during the five years preceding. The annual mortality rate was 20.7 per 1,000. The deaths from infectious diseases numbered 197, or 11.2 per cent. of the total mortality. Chief among the causes of death were diarrheal diseases, 473; diseases of the nervous system, 172; heart diseases, 126; consumption, 123; accidents and violence, 105; and pneumonia, 53. Of the communicable diseases 32 deaths were due to typhoid fever, 19 to whooping cough, 8 to diphtheria, 4 each to cerebrospinal meningitis and measles; 2 to influenza and 1 to scarlet fever.

GEORGIA.

College Notes.—The Atlanta College of Physicians and Surgeons commenced its annual session October 2.——The seventy-sixth annual session of the Medical College of Georgia, Augusta, commenced October 2, with an address by the dean, Dr. Joseph E. Allen.

District Society.—At a meeting of the Clarke County Medical Society, September 12, it was decided to take steps to organize the Eighth District Medical Association. Invitations have been sent to the organizations in the various counties in the district to send delegates to the meeting to be held in Athens about November 1 to perfect the organization.

Pasteur Institute.—At the seventh annual meeting of the board of governors of the Georgia Pasteur Institute, Atlanta, the report of Dr. James N. Brawner showed that up to date 653 patients were treated, of whom only two died after the completion of the period of immunity after treatment. The following officers were re-elected: President, Dr. Henry R. Slack, LaGrange; vice-presidents, Drs. James H. McDuffie, Columbus, and Benjamin W. Hunt, Eatonton; pathologist, Dr. Claude A. Smith, Atlanta; physician in charge, Dr. James N. Brawner, Atlanta, and assistant physician, Dr. Edward C. Cartledge, Atlanta.

ILLINOIS.

Coroner's Cases.—During September, 296 cases were reported to the coroner's office, Cook County, 71 fewer than for August, and 12 fewer than for the corresponding month of 1906. Of the deaths reported, 29 were from suicide, 15 from homicide, 22 were due to railway accidents, and 23 to street car accidents.

Personal.—Dr. John J. Stiles, the dean of the medical profession of Pontiac, was given a surprise call by the members of the profession of the city in honor of his eightieth birthday anniversary, and was presented with a gold-headed silk umbrella and other gifts by his friends.——Dr. Harry M. Hayes has been chosen as a member of the staff of St. Francis Hospital, Peoria.

Unlicensed Practitioners Fined.—An individual calling himself "Dr. Bosworth," who it is alleged, has been selling a mixture composed chiefly of table salt, iron and sulphur, was fined $100 and costs in Chicago on September 25, on the charge of practicing medicine without a state license.——"Dr." J. Kubus, Chicago, was fined September 30, $200 for practicing without a license. In both of these cases prosecution was made by the assistant attorney for the State Board of Health.

The Edwards Sanatorium.—A new building accommodating ten female patients has been completed at the Edward Sanatorium, Naperville. This institution for the treatment of early cases of pulmonary tuberculosis was created a year ago by Mrs. Edward L. Gaylord, as a memorial to her husband. She recently deeded the entire plant, with 40 acres of land, to the Chicago Tuberculosis Institute. There are ten free beds, the other sixteen patients paying $10 per week. Applications for admission should be made to Dr. Theodore B. Sachs, 287 West Twelfth street, Chicago.

Chicago.

Physician Exonerated.—The case against Dr. Walter B. Metcalf, charged with performing a criminal operation on Miss Nellie Kilton, was dismissed by Municipal Judge Sadler September 26, on the ground that the complaining witness had testified falsely.

College News.—The College of Physicians and Surgeons (Medical Department of the University of Illinois), was opened October 1 for the session of 1907-8. The opening address was delivered by Prof. L. Harrison Mettler, the theme being, "Art and Science as Applied in the Practice of Medicine."

Wants Inebriate Hospital.—Dr. Haim I. Davis, in charge of the detention hospital, as a result of investigation of eastern hospitals during a recent trip, advises that a hospital be established for victims of alcoholism, as the County Hospital maintains no alcoholic wards, and as the detention hospital facilities in this direction are limited.

Deaths of the Week.—During the week ended October 5, 565 deaths were reported, 16 more than for the preceding week and 1 fewer than for the corresponding week of 1906. This is equivalent to an annual death rate of 13.98 per 1,000. Acute intestinal diseases still lead the list, with 83 deaths, followed by consumption, with 65; pneumonia, 49; nephritis, 45; heart diseases, 40; violence, 37, and cancer, 34. During the week typhoid fever caused 9 deaths, diphtheria 8, scarlet fever 3, and whooping cough 2.

Medical Inspection of School Children.—During the first twenty school days, 17,820 children were examined by the medical inspectors, and 1,476, or 8.3 per cent., were excluded from attendance at school on account of the existence of the following contagious diseases: Tonsillitis, 315; pediculosis, 278; impetigo contagiosa, 188; scarlet fever, 120; scabies, 99; diphtheria, 84; whooping cough, 66; purulent sore eyes, 45; measles, 42; mumps, 40; chickenpox, 32; and tuberculosis, 3. Of the 456 exclusions during the week, 105 were afflicted with tonsillitis, and microscopic examination of cultures from 66 of these cases showed 7 of them to be diphtheria.

INDIANA.

"The Great American Fraud."—The Vigo County Medical Society has purchased 500 copies of the "Great American Fraud," to be disposed of as follows: Four hundred and twenty-five to the teachers of the county, distributed at the county institution, 25 to the clergymen of Terre Haute, and the remainder to be placed in the waiting rooms of physicians of the county.

Communicable Diseases.—Three hundred and one cases of typhoid fever had been reported at Indianapolis in September up to the 13th with five deaths.——Several cases of diphtheria are reported from Elnora with two deaths.——Owing to the prevalence of smallpox in Pipe Creek Township Dr. Ernest M. Conrad, Anderson, county health officer, has issued orders that the schools in the district near Orestes shall not be opened.——Four cases of diphtheria with one death are reported from Evansville, and a rigid quarantine has been established at the four homes affected.

KANSAS.

Medical College Opens.—The Kansas Medical College, Medical Department of Washburn College, Topeka, opened for its annual session September 4.

Personal.—Dr. Lewis Y. Grubbs, Topeka, is reported to be seriously ill with kidney disease at Stormont Hospital.——Dr. J. F. St. Clair, formerly of Des Moines, Iowa, has been made field superintendent of Bethany Hospital, Kansas City Kan.

——Dr. John C. Hall, McPherson, who has purchased an interest in the Stewart Hospital, Hutchinson, will move to that city.

Typhoid Fever.—Typhoid fever and typho-malarial fever are reported prevalent in the eastern part of Wichita.——Dr. Samuel J. Crumbine, secretary of the State Board of Health, has issued a circular of instructions to county health officers for the prevention of typhoid fever and for the care of patients. ——Typhoid fever continues prevalent throughout Leavenworth County.

Hospital Notes.—The plans for the proposed new building of Bethany Hospital, Kansas City, provide for a three-story and basement brick structure, 150 by 100 feet, fireproof and with cement floors.——A hospital is planned at Garden City, to cost $8,000 and to contain twenty rooms. Local physicians are interested, but the greater part of the money required will be donated by Mrs. Freeman of Dighton.

MARYLAND.

Lectures on First Aid.—The Pennsylvania System has arranged for its employés a course of lectures on first aid. The lectures in Baltimore will be given by Dr. J. D. Shaw in October and November.

Cottage Donated.—Mrs. J. Mifflin Hood has donated an open-air cottage to the Hospital for Crippled Children as a memorial to her father, Mr. William Painter. The cottage is being erected at Blue Ridge Summit, the summer home of the hospital.

Baltimore.

Typhoid Fever.—During September 474 cases of typhoid fever were reported, with 41 deaths.

College Notes.—The University of Maryland School of Medicine began its annual session October 2.——The Woman's Medical College of Baltimore opened for its annual session October 3, with an address by Dr. Guy L. Hunner.——The annual session of the Maryland Medical College commenced October 1.——The College of Physicians and Surgeons commenced its annual session October 1 with an address by Prof. Cary B. Gamble, Jr.

Addition to Hospital.—The contract has been let for the group of buildings to be erected on the grounds of the Hebrew Hospital, and to be known as the Dr. Samuel Leon Frank Memorial Hospital. The new structures, which will greatly enlarge the hospital, will consist of a four-story administration building, a ward building, and a laundry and boiler building. It is estimated that the improvements, which will also be made to the present hospital building will cost about $150,000, and the work, it is expected, will be completed about September, 1908.

Pure Milk.—The question of pure milk supply is now agitating the profession and the city health officials. A meeting is to be held on October 18, at the hall of the Medical and Chirurgical Faculty of Maryland to discuss the question. Papers are to be read by Dr. William E. Hoffman, city chemist, and Dr. William R. Stokes, city bacteriologist. Dr. C. Hampton Jones, assistant health commissioner, will exhibit charts. The idea of licensing the milk dealers has been suggested, and if done would permit the inspection of dairies, etc., from time to time. An ordinance to this effect is to be prepared and introduced in the city council about January 1.

MICHIGAN.

Correction.—In THE JOURNAL, September 14, the marriage of Dr. Charles J. Sorensen, Calumet, was noted. We are advised that Dr. Sorensen was to have been married in London on August 28, but that owing to his illness, which eventually proved fatal, the wedding was delayed.

August Mortality.—The returns for August show that 2,735 deaths, equivalent to an annual mortality of 12.4 per 1,000, were reported. Of these 623 were of infants under 1 year of age; 193 of children from 1 to 4 years of age, and 729 of individuals aged 65 or over. Among the important causes of death may be noted infantile diarrhea and enteritis, 291; violence, 239; tuberculosis, 178; cancer, 142; pneumonia, 61; meningitis, 46; typhoid fever, 45; diphtheria, 28; whooping cough, 23; measles, 6; and scarlet fever, 4.

Personal.—Dr. Joseph Foster, Lansing, has been appointed medical examiner for the new State Sanatorium, Howell.——Dr. James P. Reed, Rockwood, who has been seriously ill for a year, is reported to be convalescent.——Drs. Collins H. Johnson, Grand Rapids, and Frank R. Gray, Clare, have been reappointed members of the board of control of the State Sanatorium, Howell.——Dr. G. Duffield Stewart, Detroit, is reported to be ill on his farm near Mount Clemens.——Dr. and Mrs. Louis Barth, Grand Rapids, start this month for a seven months' trip round the world, going by way of the west.

Society Organized.—An informal meeting of the physicians of Berrien County was held in the office of Dr. Simeon Belknap, Niles, September 10, when a society was organized, to be known as the Berrien County Regular Medical Society. A constitution and by-laws were adopted and the following officers elected: President, Dr. Simeon Belknap, Niles; vice-presidents, Drs. William T. Bertrand, Coloma, and George M. Bell, Benton Harbor; secretary, Dr. Corydon M. Ryno, Benton Harbor; treasurer, Dr. John D. Greenamyer, Niles; executive committee, Drs. George M. Bell and Corydon M. Ryno, Benton Harbor, and Homer S. Carr, Niles, and committee on ethics and admission of members, Drs. Wakeman Ryno, Benton Harbor, and John D. Greenamyer, Niles, and William T. Bertrand, Coloma.

MINNESOTA.

Tent Colony Established.—A tuberculosis tent colony has been established on the west side of the Mississippi, opposite St. Paul, by people interested in the cure of tuberculosis.

Personal.—Dr. John C. Harding, St. Paul, who was operated on for appendicitis recently, is reported to be improving.——Dr. and Mrs. David H. Lando, St. Paul, have gone to Vienna. ——Dr. Frederick J. Patton, Duluth, has returned after a three months' trip abroad.

MISSOURI.

Diphtheria.—On account of two cases of diphtheria, with one death, and the necessity of quarantining three houses at Lamonte, the public schools were ordered closed and all church services and public meetings prohibited for two weeks.

Medicine Man Fined.—C. W. Zulzer, manager of a medicine company in Kansas City, charged with distributing objectionable pamphlets and exhibiting objectionable anatomic casts is reported to have been found guilty and fined $25, September 14.

State Sanatorium Officers.—Dr. W. M. Bayless, Mt. Vernon, has been appointed superintendent of the Missouri State Sanatorium for Incipient Tuberculosis, Mt. Vernon; Dr. O. H. Brown, physician in chief; Mr. Charles Lawson, treasurer, and Dr. Jesse L. Eaton, Bismarck, president of the board of managers of the institution. Examining physicians from various parts of the state, numbering 49, have also been appointed.

NORTH CAROLINA.

Hospital Staff Elected.—The following medical staff has been elected by the board of managers of St. Peter's Hospital, Charlotte: Drs. Baxter S. Moore, Walter O. Nisbet, Thomas H. Wright, George W. Pressly, Charles H. C. Mills, William A. Graham, Brodie C. Nalle and A. Miller Whisnant.

Staff of Sanatorium.—The staff of the new Charlotte Sanatorium, which is soon to be opened with 50 private rooms, is as follows: Medicine, Dr. Edward C. Register; surgery, Dr. George W. Pressly; gynecology, Dr. Charles M. Strong; gastric and intestinal diseases, Dr. Walter O. Nisbet; ophthalmology, Dr. E. Reid Russell; nervous diseases, Dr. J. P. Munroe; dermatology, Dr. William D. Witherbee, and genitourinary and rectal diseases, Dr. Andrew J. Crowell.

NEW YORK.

New York City.

Personal.—Drs. Thomas E. Satterthwaite, Bache M. Emmett, Seward Erdman, John E. L. Davis, Smith Ely Jelliffe, Minas S. Gregory and William A. White have returned from Europe.

Milk Law Violations.—There were 260 prisoners in the Court of Special Sessions one day last week, all charged with violations of the milk laws. Eighty of these were milk dealers caught with dirty cans. Sixteen dealers pleaded guilty to selling adulterated milk.

Hospital Notes.—An ambulance from St. John's Hospital, Long Island City, was caught between two trolley cars and Dr. W. H. McGuire was severely injured.——In Williamsburg lightning struck St. Catherine's Hospital, throwing the 160 patients into a panic.

Gifts to Charity.—Gen. Charles E. Furlong, who died September 25, made twenty-three individual bequests of $5,000 each to charitable institutions in New York City, and among them are Nursery and Child's Hospital, New York Foundling Hospital, New York Infant Asylum, New York Infirmary for Women and Children.

Typhoid Fever.—Dr. Darlington, the health commissioner, and Chief Engineer De Varona of the water department, made

hurried trips to Mount Kisko September 28, having heard more cases of typhoid had occurred in that village. The dwellings from which the patients were taken to the hospital were places where the drainage goes into the Croton water. Mr. De Varona prepared plans which would take care of the village sewage for practically all time.

Contagious Diseases.—For the week ended September 28, 345 cases of tuberculosis with 130 deaths were reported to the sanitary bureau; 180 cases of typhoid fever, with 23 deaths; 174 cases of diphtheria, with 13 deaths; 134 cases of scarlet fever, with 2 deaths; 112 cases of measles, with 3 deaths; 18 cases of whooping cough, with 5 deaths; 15 cases of cerebrospinal meningitis, with 10 deaths; and 13 cases of varicella, a total of 991 cases and 186 deaths.

Local Street Railway Accidents.—Between August 5 and August 31, there were about 5,500 accidents on the railroads of the various bureaus of this city, the majority occurring while alighting from cars. The serious accidents may be classified as follows: Persons killed, 42; fractured skulls, 10; amputated limbs, 10; broken lims, 44; and other serious injuries, 53, a total of 159. Persons injured in car collisions numbered 145; persons injured in collisions with vehicles, 465; persons struck by cars, 405; persons injured boarding cars, 641; persons injured alighting from cars, 1,263; employés injured, 641; derailments, 35; injuries on stairways, 26, and other accidents, 1,881.

OHIO.

Hospital Dedicated.—The corner stone of the new hospital at Columbus Barracks was laid September 9. Congressman Frank L. Taylor presided and made the principal address. Addresses were also made by the Mayor of Columbus, Colonel Edwin Glenn, commandant; Major Henry I. Raymond, chief surgeon, and R. Grosvenor Hutchins.

Ill and Injured.—Dr. William H. DeWitt, Cincinnati, is critically ill with septicemia.—Dr. Robert C. Rind, Springfield, who has been seriously ill, is reported to be out of danger.——Dr. William Mulholland, Sidney, was seriously injured by being thrown from his sulky, September 8.—Drs. Harry S. Davidson, Barberton, and Mark D. Stevenson, Akron, were seriously injured in an automobile accident, September 16.——Dr. John M. Lisle, Columbus, who has been seriously ill with heart disease, is reported to be improving.

PENNSYLVANIA.

Life Saver Honored.—Dr. Henry Beates, Jr., president of the State Medical Examining Board, was presented with a silver loving cup at the meeting of the State Medical Society in Reading in recognition of his bravery in saving the lives of four persons in a capsized boat at Atlantic City last July.

Sleeping Car Orders.—Dr. Samuel G. Dixon, State Commissioner of Health, has ordered that the sheets on beds in Pullman sleepers be made longer so as to prevent the blankets from coming in contact with the faces of the occupants. He also issued an order forbidding porters to brush clothing in the aisles of the cars.

Smallpox on Steamer.—A seaman on the British steamship *Vienna* died from smallpox while the ship was being held in quarantine September 24. The vessel was taken to the quarantine station at Reedy Island for fumigation. No other evidence of the disease could be found among the crew, but the members were all placed in quarantine.

Cost of Keeping the Insane.—The report of the State Hospital for the Insane at Norristown shows that it cost $4.10 a week to keep each of the 2,200 inmates of that institution during the past year. This is an increase of 40 cents a week more than the cost over the preceding year. The increase, the trustees state, is due principally to the higher prices of food and other commodities.

Typhoid at Pottsville.—The cause of the epidemic of typhoid at Frackville, a suburb of Pottsville, was located by Dr. John A. Fourse, of the State Board of Health. He detected the source of the infection in two springs from which the town secured much of its drinking water. It is feared that the epidemic may spread throughout the county on account of the heavy rains and floods.

Hospital Trustees Appointed.—The governor has appointed the following as a Board of Trustees to the State Hospital for Feeble-Minded and Epileptics, Spring City: John P. Crozer, Upland; Dr. Joseph K. Weaver, Norristown; Henry W. Comfort, Fallsington; Dr. Geo. B. R. Umstead and Samuel A. Whitaker, Phoenixville; V. W. Dambly, Skippack; and Dr. Thomas C. Detwiler, Lancaster.

Charitable Bequests.—By the will of the late Mrs. Belle R. Crump of this city the Emergency Hospital of Warren, Pa., receives $10,000.——By the will of the late John McDermott the Little Sisters of the Poor will receive $2,000; St. John's Orphanage, $2,000; St. Joseph's Hospital, $1,000; and the German Hospital, $1,000.——A provisional bequest of $10,000 to the Federation of Jewish Charities is contained in the will of the late Henry M. Rosenbaum.

Hospital Cornerstone Laid.—The cornerstone for the new hospital of the Woman's Medical College of Pennsylvania was laid September 25, by Dr. Clara Marshall, dean of the college, and an address was delivered by Dr. Henry Beates, Jr., president of the State Medical Examining Board, who spoke to the students on "The Relation of Medical Schools to the State Board of Examiners." The new hospital will be a six-story brick structure, and will cost about $100,000.

Philadelphia.

New Police Surgeon Appointed.—Dr. Hubley R. Owen, formerly a resident physician in the Episcopal Hospital, was appointed chief surgeon of the bureau of police and fire by Mayor Reyburn, October 1. Dr. Owen is a graduate of the University of Pennsylvania.

Personal.—Dr. Norris Wister Vaux, resident physician in the Pennsylvania Hospital, was elected out-patient dispensary chief of the Germantown Hospital. He entered on his duties October 1.——Dr. and Mrs. Donnel Hughes and Drs. Henry W. Cattell, J. William White and McCluney Radcliffe have returned from Europe.

Hospital Society Election.—At a meeting of the medical society of the Woman's Hospital, the following officers were elected for the year: President, Dr. Catharine Macfarlane; vice-president, Dr. Florence H. Richards; treasurer, Dr. Elsie R. Treichler, and secretary, Dr. Ella K. Gerlach.

Health Report.—The total number of deaths reported for the week ended October 5, reached 406. This is a decrease of 1 from the number reported in the preceding week and an increase of 4 over the corresponding week of last year. The principal causes of death were as follows: Typhoid fever, 11; pertussis, 5; tuberculosis, 48; cancer, 16; apoplexy, 13; heart disease, 43; acute respiratory disease, 35; enteritis, 43; hepatic cirrhosis, 5; nephritis, 25; premature birth, 12; congenital debility, 15; accidents, 17; and marasmus, 10. There were 146 cases of contagious disease reported, with 7 deaths, as compared with 158 cases and 17 deaths reported in the previous week.

Hospital Reports.—The report of the Germantown Hospital for September shows that the number of patients treated in the various dispensaries reached 1,363; 228 persons were cared for in the hospital proper.——The report of the Charity Hospital for September shows that the patients treated in the different clinics were as follows: Medical, 234; surgical, 326; gynecologic and children, 170; diseases of the eye, 36; diseases of the ear, 30; and of the nose and throat, 35.——The report of the Howard Hospital for September shows that 819 cases were treated. Of this number 225 were accident cases and the remainder of the patients were treated in the dispensary. In the drug dispensary over 3,000 prescriptions were prepared.

Warrants for Cocain Sellers.—Warrants have been issued for several druggists in the Borough of Austin, charged with indiscriminate sale of cocain. The charge was made by Daniel E. Baker, the borough constable. The cocain was dispensed in powders, under the name of "spraz," to young men and young women, and it is stated that there are more than 50 persons in the borough who are now pronounced cocain habitués. One of the users of the drug made an affidavit declaring that in the past five years he has paid to one druggist $1,000 for "spraz." and that he had spent every penny he could earn, beg or borrow. The "spraz" sensation was created by one of the cocain "fiends" who was arrested for stealing a lap-robe, and confessed that he committed the crime in order to secure money to purchase "spraz." Most of the persons who have indulged in the habit have become physical wrecks.

TEXAS.

Medical Staff Reorganized.—At a meeting of the Board of Trustees of the State Hospital, Terrell, September 6, Dr. George F. Powell was made first assistant physician; Dr. Claude M. Poff, second assistant physician; Dr. E. F. Johnson, third assistant physician, and Dr. J. T. Rowe, fourth assistant physician, the latter succeeding Dr. James R. Nichols, resigned.

Communicable Diseases.—Dr. P. J. Shaver, quarantine officer at El Paso, who has been in the dengue fever district, reports that conditions have been growing better for some time and

that there is no cause for further alarm.——Several cases of diphtheria have been reported from Marlin recently.——Austin reports an epidemic of dengue in mild form.——Dengue is also reported at Bastrop and several other inland Texas towns.

New Hospital.—The new Baptist Sanatorium at Houston is now reported to be in thorough running order and will open its training school for nurses this month. The following compose the staff of the sanitarium: Surgery, Drs. Oscar L. Norsworthy, Robert T. Morris, Jacob H. Sampson, Forrest B. Smith, Robert L. Cox and Edward M. Armstrong; neurology, Drs. Frank R. Ross and John B. York; eye, ear, nose and throat, Drs. Wallace W. Ralston, George P. Hall and William L. Rogers; gynecology, Drs. Robert W. Knox, Gavin Hamilton and Eb. N. Gray; obstetrics, Drs. John D. Duckett, Albert M. Davidson and Kenny N. Miller; and general medicine, Drs. Joseph W. Scott, Frank H. Neuhaus and Samuel G. Northrup. The staff, at its initial meeting September 14, perfected its organization, making Dr. Wallace M. Ralston, chairman, and Dr. Frank R. Ross, secretary.

Personal.—Dr. James M. Inge, Denton, has resigned as a member of the school board.——Dr. Warren T. West, Waxahachie, suffered a loss of $2,500 by fire September 3, with no insurance.——Dr. R. H. Huvelle, Texas City, has been named by the state health officer as eye specialist for the state institutions.——Dr. James D. Osborne has been appointed health officer of Cleburne.——Dr. Vene P. Armstrong, Dallas, assistant state health officer, has gone on an inspection tour to Vera Cruz and Yucatan, Mex., to investigate the yellow fever situation for the information of the health department.——Dr. Robert L. Dinwiddie, the newly appointed bacteriologist of San Antonio, has reported for duty.——Dr. Robert E. Moss, a member of the San Antonio Board of Health, has resigned.——Dr. William H. Anderson, city physician of El Paso, has returned from Rochester, Minn.——Dr. Thomas R. Burnett, first lieutenant and assistant surgeon in the Texas National Guard, has received authority to take the course at the Army Medical School, Washington, D. C.——Dr. Vene P. Armstrong, Dallas, has resigned as state quarantine officer at Brownsville, to take effect November 1.

GENERAL.

Railway Surgeons Meet.—The twenty-sixth annual meeting of the Association of Surgeons of the Pennsylvania Lines, west of Pittsburg, was held in Pittsburg September 12. Dr. Albert I. Bouffleur, Chicago, was elected president; Dr. L. A. Butler, Louisville, Ky., vice-president, and Dr. Stewart L. McCurdy, Pittsburg, was re-elected secretary-treasurer.

Personal.—Dr. James W. Smith, of the Manila Bureau of Health, who has been on duty at Ilocos Norte, has returned to Manila and will leave for Baguio, where he has been ordered to take charge of the sanitarium.——Dr. James B. Pascoe, U. S. Army, on duty at San Tomas, Batangas, was operated on for appendicitis at the Division Hospital, Manila, August 9.

Consumptive Ward Built.—A ward for consumptives has just been completed at the Lihue (T. H.) Hospital. The ward is largely enclosed in glass, so as to secure the best results of sunshine for the patients, and is entirely detached and separate from the other hospital buildings. Of late years, tuberculosis has increased markedly in the Lihue district. The increase is said to date from the introduction of Porto Ricans into the islands.

Electro-Therapeutists Meet.—At the seventeenth annual meeting of the American Electro-Therapeutic Association, held in Boston, September 17 to 19, the following officers were elected: President, Dr. Herbert F. Pitcher, Haverhill, Mass.; vice-presidents, Drs. Edward C. Titus, New York City, and Jefferson D. Gibson, Denver; secretary, Dr. Albert C. Geyser, New York City; treasurer, Dr. Richard J. Nunn, Savannah, Ga.; and members of the executive council, Drs. Morris W. Brinkman, New York City, and Charles R. Dickson, Toronto.

The Care of Railroad Men.—At the annual meeting of the board of managers of the Northern Pacific Beneficiary Association held recently in St. Paul, it was reported that during the year ended June 30, $264,862.65 had been received and that $213,358.15 had been expended; that 47,829 cases had been treated. It was determined to make improvements costing $4,000 in the company's hospital at Tacoma.——The Wabash Employé's Association reports that during the year $77,663.33 was received, or $2,794.69 more than was expended. Of the 34,123 patients treated, only 25 died. Outside of the hospital 32,710 cases were treated.

Tri-State Physicians' Meeting.—The fifteenth annual meeting of the Tri-State Medical Society of Illinois, Iowa and Missouri was held in Moberly, Mo., September 19 and 20, with Dr. Charles F. Wahrer, Fort Madison, Iowa, in the chair. The address of the president was entitled, "How Much Are Physicians Responsible for the Use of Proprietary and Quack Nostrums and for Self-Drugging Among the Laity; and How Can We Correct the Evil?" The following officers were elected: President, Dr. Godfrey O. Cuppaidge, Moberly, Mo.; vice-presidents, Drs. Robert J. Christie, Quincy, Ill., and Felix W. Garcia, St. Louis; secretary, Dr. Joseph E. Chambers, St. Louis, and treasurer, Dr. Emory Lanphear, St. Louis.

Hospital Men Confer.—The American Hospital Association at its ninth annual conference, held in Chicago, September 17-20, under the presidency of Dr. Renwick R. Ross, Buffalo, N. Y., was attended by about 150 delegates. In his annual address Dr. Ross blamed the thoughtless and indiscriminate charity which affects hospitals so generally throughout the country. It was decided to hold the next conference at Toronto, Ont., Sept. 26-29, 1908. The following officers were elected: President, Dr. Sigismund S. Goldwater, New York City; vice-presidents, Mr. J. Ross Robertson, Toronto, Dr. John M. Peters, Providence, R. I., and Miss R. B. Metcalf, Lewiston, Me.; secretary, Dr. Warren L. Babcock, Detroit, and treasurer, Mr. Asa Bacon, Chicago.

Harvey Society Lectures.—The third course of lectures under the direction of the Harvey Society of New York will be given at the Academy of Medicine Building, 17 West Forty-third Street, New York City, Saturday evenings at 8:30. They are intended for the medical profession and all interested are cordially invited to attend them. The program is as follows:

October 26.—Prof. E. O. Jordan, University of Chicago, "The Problems of Sanitation."
November 16.—Prof. James Ewing, Cornell University, "Etiology of Tumors."
November 30.—Prof. D. L. Edsall, University of Pennsylvania, "The Bearing of Metabolism Studies on Clinical Medicine."
January 11.—Prof. Ernest H. Starling, University of London, "The Chemical Control of the Body."
January 25.—Prof. George W. Crile, Western Reserve University, "Shock."
February 8.—Prof. Joseph Jastrow, University of Wisconsin, "Subconsciousness."
February 22—Prof. Otto Folin, Harvard University, "Problems of Chemistry in Hospital Practice."
March 7.—Prof. Ross G. Harrison, Yale University, "Embryonic Transplantation and the Development of the Nervous System."
April 11.—Prof. E. A. Schäfer, University of Edinburgh, "Artificial Respiration in Man."

FOREIGN.

Some New Postal Regulations in New Zealand.—The *Australasian Medical Gazette*, quoting a New Zealand newspaper, gives a list of names of individuals to whom the postal authorities forbid the "registering, forwarding or delivering of postal correspondence." The persons referred to advertise the cure of certain diseases.

The Cholera Situation in Japan and China.—Dr. Cummings of the Public Health and Marine-Hospital Service reports that the cholera epidemic in Japan is growing rapidly. In all, about twenty villages are infected. The governors of the southern kens (prefectures) have instituted what amounts to local quarantine for small craft. Acting Assistant Surgeon Ransom reports from China that the disease is still prevalent in Shanghai, and is reported to be causing about 100 deaths daily.

Anticholera Convention Between Germany and Russia.—Germany and Russia have signed a special convention allowing each country to install special sanitary officials in the border towns in case the present epidemic of cholera should spread to them. A St. Petersburg exchange states that the epidemic in Russia is spreading with giant strides, especially along the Volga. About 2,000 cases had been officially recorded up to September 7. At Bialystok a penalty of 3,000 roubles is to be enforced in case of neglect of the sanitary regulation.

Addition to Australian Sanatorium.—The new ward of the men's sanatorium of the Queen Victoria Homes for Consumptives at King's Tablelands, was formally opened during July. The ward is the gift of Mr. and Mrs. Dixon, and brings the capacity of the sanatorium up to 54 patients. The institution receives only those patients who present reasonable chance of a cure. It is in no sense a home for incurables, and when a patient reaches such a stage that there is no hope of an ultimate recovery, he must give place to another. Over 300 patients have been treated since the institution was opened three or four years ago, and of that number over 200 have been dismissed with the disease "arrested," and in a large percentage of the cases a permanent cure seems to have taken place. The least satisfactory results have been observed among those who have returned to ill-ventilated houses in cities.

International Stomatological Association.—The inaugural meeting of the International Stomatological Association was

held in Paris, August 6-7, immediately after the first French Congress of Stomatology. The officers of the association are as follows: Honorary presidents, Drs. Eugene S. Talbot, Chicago, and L. Cruet, Paris; president, Prof J. Arkovy, Budapest; vice-presidents, Prof. C. Redard, Geneva; Prof. C. Platschick, Milan; Dr. Otto Zigmondy, Vienna, and Dr. John Rygge, Christiania; secretary-general, Dr. H. Allecys, Antwerp; secretaries, Drs. J. S. Wallace, London; J. Breitbach, Dresden, and D. Nicoleacu, Bucharest; treasurer, Dr. F. A. Meyer, Amsterdam. In addition, there is a council consisting of 20 members, each representing different countries. The officers and representatives are elected for three years and the next meeting of the association will take place at Budapest, August, 1909.

Ophthalmic Work in Hong Kong.—The *British Medical Journal* gives an interesting account of the work done in the ophthalmic department of the Tung Wah Hospital Hong Kong. The department was opened in December, 1905. At first it was open only one day a week, now it is open two days a week. It was started not only for the treatment of cases of eye disease, but also for the education of the Chinese students. Eye diseases are almost as prevalent in China as in Egypt, and in Hong Kong the proportion is possibly even greater. In 1905 Dr. Harston, the medical director of the hospital, examined the eyes of children in three large institutions and found that over 70 per cent. were suffering from trachoma. The main causes of blindness in the Chinese are trachoma and ophthalmia neonatorum—two absolutely preventable diseases. Dr. Harston has been under the necessity of supplying his own instruments, and the hospital is in great need of ophthalmic apparatus. He is endeavoring to establish a system of traveling hospitals, such as have proved of value in Egypt.

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Sept. 21, 1907.

The Association of Sanitary Inspectors.

The annual meeting of the Association of Sanitary Inspectors was held at Llandudno, Wales, September 18. Sir James Crichton Browne delivered the presidental address, which was of a somewhat startling nature. One of the themes he touched on was the adulteration of milk, and he declared that until the entire milk trade in Great Britain has been reorganized, infant mortality on a large scale will continue, sickness and debility will be ever present, outbreaks of infectious disease will occur, and the race will deteriorate. He was scathing in his denunciation of the manner in which slaughter houses are conducted in England. He said that if Chicago has its jungle, London has its dismal swamp; and in support of this remark he quoted from the report of a woman inspector of factories in reference to the manufacture of jam in certain English establishments. This report stated that the fruit used for this jam is that which is unsalable for other purposes. Sir James was especially severe on the food faddists, and stated that in his opinion meat is a valuable article of diet. He also commented on the practice of eating lozenges containing chloroform, which he declared to be common among women and girls, and even children, of the lower classes in English large cities. Grocers, confectioners and provision dealers in certain sections of large cities sell such lozenges which are eagerly consumed for the narcotizing effects.

Poisonous Nuts.

A form of poisoning new in Great Britain has just been discovered and fortunately checked by prompt action. Five children suffering from acute vomiting, one from collapse, were taken to Guy's Hospital after eating of nuts bought from street hawkers. As the specimens produced were obviously rancid and unfit for food, two hawkers were arrested, the wholesaler discovered and two tons of nuts destroyed. A sea captain brought the nuts into port, having loaded his ship with them as a speculation. Though no one knew what these nuts were or whence they came, he sold them to hawkers, apparently for human consumption. The barrows went forth placarded: "Kalov nuts, fresh from America." They have been identified as "Aleurites fordii," coming from China, where they are known to be poisonous and are used for the manufacture of oil. They were never previously imported into England.

The Royal Army Medical College.

The new buildings of the Royal Army Medical College in Grosvenor Road, on one side facing the river and on the other the Tate Art Gallery, erected by the government at a cost of $400,000, are almost finished. The lower part is of the free classic design and is built of gray granite; the upper part is of brick with stone dressing. The Grosvenor Road frontage is very imposing, the roof being supported by Ionic columns and entablatures, resting on a massive granite portico base, over which is the royal monogram. There are two blocks—one residential to accommodate about eighty students, the other containing the laboratories, a museum, lecture rooms, etc. The college is well equipped on the latest scientific models, and contains handsome lecture and class rooms, reading room, billiard room and officers' mess and quarters. It is intended that it shall become a center for medical research and for the study of tropical medicine. There will be two courses—senior and junior. The junior course will be taken by those who have just passed the entrance examination of the army medical service; the senior course will be taken by officers who have returned from foreign service. The latter will undergo a special course of training by the professors of the college and some of the most distinguished physicians and surgeons of the London hospitals. The staff will be as follows: Military surgery, Major C. G. Spencer; tropical medicine, Lieut. Col. R. J. S. Simpson; hygiene, Lieut. Col. A. M. Davies; assistant professor, Major C. E. P. Fowler; pathology, Lieut. Col. Leishman; assistant professors, Major W. S. Harrison and Col. F. J. Lambkin. The clinical teachers are as follows: Medicine, Dr. H. M. Murray and B. P. Hawkins; surgery, Mr. G. H. Makins and H. F. Waterhouse.

VIENNA LETTER.

(From our regular correspondent.)

VIENNA, Sept. 24, 1907.

International Congress on Tuberculosis.

The sixth International Congress on Tuberculosis was held in this city September 19-21. The opening banquet was given by the government to the visiting members and the city of Vienna gave a reception in honor of the meeting. One point of interest is the fact that throughout the transactions infection by way of inhalation was accorded but minor consideration and the more recent theory of infection by way of the digestive tract and lymphatic glands was correspondingly to the fore.

Old-Age Pensions for Country Doctors.

A bill has been passed by the legislative assembly of Lower Austria providing for pensions for country doctors and making provision for their widows and children. The pension will amount to about $300 annually, payable after thirty years' service or before that time if the physician is permanently disabled while on duty. In return for the old-age pensions the physicians will have to perform certain duties gratuitously, such as vaccination of the poor and certain services in the poor-houses and infirmaries. The cost of these pensions will be met principally by the state and partly by a deduction of 3 per cent. from the salary paid the physicians for state services. A sum of about $20,000 will be set aside by the government during the next five years for this purpose, and the law will come into force in 1908, when fifty-two physicians with from 30 to 35 years of service to their credit will reap the benefit of the law. When a physician, who is the recipient of a pension, dies, his family will receive for the current year the full pension and for the years following 50 per cent. of the full amount.

Physicians' Incomes in Austria.

In an article compiled for the *Medicinische Blätter*, Dr. Pick gives an account of the financial position of physicians in Austria. The basis of taxation in Austria is the personal income after deducting all working expenses and insurance premiums. The lowest taxable income is $250 annually. Of the 10,000 medical men on the medical register in Austria, only 65 per cent. pay any income tax. This means that about 35 per cent. do not clear $250 a year. About 6 per cent. have a net income of from $1,500 to $2,500 a year, and 3 per cent. are reported to make more than $2,500 a year. The average income of the general practitioner is about $1,000 a year, while the salary of men in official positions is about $800. It is shown that about 40 per cent. of the taxable income of physicians comes from other sources than practice. The cost of living in Austria is about $1,000 a year for an average family. As regards mode of payment, the fees are either paid at once or after the New Year, especially with the country folks. Bad debts amount to about 20 per cent., but, as a rule, they can be obtained through the district courts, so that only about 5 per cent. is lost. The average rate of payment in the country is 20 cents for an office visit and double that sum for a house call, with a mileage fee. In towns of at least 10,000 inhabitants the office fees are not lower than 40 cents and a house call from 60 to 80 cents.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Typhoid Fever.

(*Continued from page 1198.*)

4. THE MANAGEMENT OF THE BOWELS.

The specific inflammation caused by this disease is located in the lower part of the small intestine. The result of inflammation in the intestine is diarrhea, consequently diarrhea is a symptom of this disease and is Nature's method of removing undigested food and the products of inflammation. Hence constipation is a thing not desired, and should be prevented when it occurs in typhoid fever. On the other hand, very frequent, or even a number of movements a day should be prevented; consequently we should aim to have a daily complete evacuation of the bowels by artificial means.

It is always a good plan in the beginning of this fever, as in others, to administer one dose of calomel, as:

℞. gm.
Hydrargyri chloridi mitis..... |30 or gr. v
Sodii bicarbonatis ..... 1| gr. xv
M. et fac chartulam 1.
Sig.: Take at once.

The dose of calomel may be repeated in forty-eight hours, if deemed advisable, but later in the disease calomel is best not given. Castor oil in capsules or on clear coffee, or with some effervescing solution, as Vichy, is strongly recommended, in small doses, as a laxative, and, if the patient's stomach does not repudiate it, is perhaps one of the best. A method found very satisfactory is to give a laxative, and one that does not cause much peristalsis and causes no irritation, on every alternate day. Some simple saline, as Rochelle salt, Carlsbad salts, Hunyádi, or any simple saline aperient, in the dose found sufficient, is very satisfactory. The advantages of the salines are that they clean the stomach, aid the liver by passing along all the old bile, and relieve the congestion of the portal circulation, all of which is more or less needed in this long-continued sickness.

On the alternate day, the day on which the laxative is not administered, the bowels should be moved by a small enema consisting of a tablespoonful of glycerin and two tablespoonfuls of water.

The nurse should be supplied with very soluble tablets each containing 1/10 grain morphin sulphate with instructions to administer one of these tablets after two large movements or three small ones, so that the laxative may not cause a troublesome diarrhea. This amount of morphin is generally sufficient to stop the action of the bowels for a number of hours. If it is not successful, the dose could be repeated.

By this method toxemia is diminished, fermentation and gas distension are also prevented, the tongue remains moist and not heavily coated, and the danger from hemorrhage and perforation, which is so much more likely to occur from distension, is reduced to a minimum. The so-called typhoid symptoms are also less by this management of the disease, i. e., the delirium, stupor and symptoms of nervous irritation as subsultus and carphologia are markedly less in evidence. Of course it should be understood that intestinal hemorrhage, symptoms of peritonitis, great circulatory weakness, or very low temperature would preclude the administration of any laxative until such symptoms had abated.

Whether or not so-called bowel antiseptics should be administered must be decided by the belief of each individual physician. There is no question that some drugs will produce a certain amount of antisepsis in the upper part of the bowel. How far such action extends it is impossible to determine. It is absurd to suppose that bowel antiseptics could be carried to the region of inflammation in typhoid fever. It is just as absurd for the laboratory scientist to declare that because fecal matter can never be rendered antiseptic by administration of drugs by the mouth, that bowel antiseptics are of no value. Consequently, it seems best many times to administer several doses of a drug that is known to diminish fermentation and at least to inhibit an excessive growth of germs, and possibly prevent the colon bacillus and typhoid bacillus from migrating to the upper part of the intestine. Various intestinal antiseptics have been suggested. The best of these are probably phenylis salicylas (salol), beta-naphthol, beta-naphthol bismuth, thymol, various salicylic acid combinations, various benzoates, various phenol combinations, and various peroxid of hydrogen salts. It is not necessary to discuss the varying values or powers of these drugs. It is certainly inexcusable to use any drug in this disease that would interfere with the function of any organ or that would deteriorate the blood.

Provided that the kidneys show no congestion and the urine contains no albumin, salol in small doses is one of the most efficient drugs to administer for this purpose. It does not disturb the stomach and it is broken up in the upper part of the intestine into salicylic acid and phenol. If this drug is selected, it should be administered as follows:

℞. gm.
Phenylis salicylatis ..... 4| or 3i
Fac capsulas 20.
Sig.: One capsule every six hours.

If at any time the urine becomes very concentrated or albumin is found, or the urine assumes a dark color, the salol should be stopped.

It has been claimed that dilute hydrochloric acid administered several times a day, given very well diluted, not only is an aid to stomach digestion, but has a specific good action in typhoid fever. Certain it is that dilute hydrochloric acid is a stimulant to intestinal secretions.

℞. gm.
Acidi hydrochlorici diluti..... 25| or 3i
Sig.: Ten drops in half a glass of water every six hours.

5. STIMULATION.

It should not be considered that because a patient has typhoid fever he should be given alcohol. If alcohol is administered there should be a reason for it. It is unnecessary even to touch on the long discussion as to whether or not alcohol is a cardiac stimulant. Certain it is that alcohol dilates the peripheral blood vessels, and certain it is also that this dilatation tends to promote the radiation of heat and an increased perspiration. Consequently, the administration of small doses of alcohol has many times a physiologic reason. Such dilatation of the peripheral blood vessels also tends to diminish internal congestions, and to relieve a laboring heart. Consequently, in most cases of typhoid fever a small amount of alcohol in the form of brandy or whisky, in one or two teaspoonful doses every six, or at most every three hours, will do nothing but good.

There is probably also no question that a small amount of alcohol will protect, during the fever process, a certain amount of fat in the body and perhaps delay the wasting.

On the other hand, to rely on alcohol as a stimulant in actual cardiac failure is a mistake, although its proper administration for days before may prevent cardiac failure from occurring. In other words, large doses of alcohol should never be given, and the above amounts are sufficient.

The administration of alcohol should not be begun until the pulse is 110 or more. If under its action the pulse becomes strong and bounding, the face flushed, the tongue dry, and the breath gives off the odor of alcohol, too much has been given. There is no question that many times delirium in typhoid fever has been caused by alcohol and not by the fever.

During the latter part of this disease, if the circulation begins to fail and the heart becomes weak, reliance should be placed on strychnin sulphate, which is best given in soluble tablets each containing 1/30 grain. The frequency of administration should be one tablet every six hours, and this should not be increased except in emergencies. If the circulation does not improve, the dose of strychnin should be administered hypodermically, either twice or four times in twenty-four hours, if deemed necessary. When given twice in twenty-four hours, at twelve-hour intervals, on the alternate six-hour intervals the tablet should be given by the mouth.

While at any time an extra dose of strychnin may be given by hypodermic if needed, the interval before the next injection should then be extended. Under no circumstances should strychnin be pushed much beyond the above amounts and frequency advised. Strychnin can so act on the heart as to prevent its properly dilating during diastole.

A cup of strong coffee, especially in the morning, will add its quota toward cardiac stimulation if such is needed. Adrenalin solution or suprarenalin solution (1 to 1,000), in five-drop doses in an equal amount of water, dropped on the tongue and repeated every fifteen minutes for three or four times, will be found a valuable cardiac and circulatory stimulant in emergencies. This drug, however, should not be continued too long nor repeated too frequently, and is best reserved for emergencies. Digitalis should never be given in typhoid fever. Strophanthus in small doses may be administered during the convalescence.

6. TREATMENT OF TROUBLESOME SYMPTOMS OR COMPLICATIONS.

The early *headache* will be stopped by the antipyretic measures suggested, and the ice-cap later will generally relieve this condition.

If there are *meningeal* symptoms, the hair should ordinarily be cut so that the cold applications will be more effectual.

Sleeplessness is generally best combated by a small dose of morphin, and 1/10 grain morphin sulphate is generally sufficient If *meningitis* is present, a few doses of hyoscin hydrobromate may be needed (1/200 of a grain, given hypodermatically). Ordinarily, morphin should not be given in meningitis.

Constipation, as above stated, should be prevented, and troublesome diarrheas are also prevented by the above treatment.

Tympanites is a symptom so hard to combat and so dangerous that its treatment is prophylactic, and the management of the bowels above described will generally prevent this symptom. If it occurs, the ice coil on the abdomen, glycerin enemata, and oil of turpentine by the mouth represent the best methods of removing it. The rectal tube is rarely of any avail. The hypodermatic administration of aseptic ergot or atropin sulphate is sometimes of benefit.

If *intestinal hemorrhage* occurs, morphin should be administered hypodermatically, all food withheld and developments awaited. If the hemorrhage has been severe, all the methods used for reviving a patient with internal hemorrhage should be tried. Whether or not laparotomy should be done must be decided by the individual case.

Some clinicians believe that the administration of some preparation containing tannic acid during the week when intestinal hemorrhage is most likely to occur in typhoid fever tends to prevent this complication. This is very doubtful, but if the drug is given it should be in small doses, and one of the preparations that will not irritate the stomach. It would be much more rational all through the course of the disease to administer, daily, a small amount of gelatin in the form of wine jelly.

If *perforation* occurs, surgical counsel should be obtained and immediate surgical interference discussed. The only treatment advisable for this condition is morphin hypodermatically, the withholding of food, and the local application of an ice poultice.

Bed sores are generally prevented by efficient nursing. The first discoloration of the skin of a part should cause that part to be relieved from pressure by rubber ring cushions, or some other device. Gentle massage of the part with some fat, such as *Adeps lanæ hydrosus*, and if the skin is broken, the frequent bathing with peroxid of hydrogen solution will almost invariably prevent actual breaking down of tissue.

7. THE MANAGEMENT OF CONVALESCENCE.

The return of a patient to active life after typhoid fever should be slow, even if his strength and apparent health seem to allow more rapid complete recovery. This means that every detail of his convalescence should be made as slow as he and the family will allow. He certainly should not be allowed to sit up or to take solid food until he has been without temperature for ten days, and except for some simple tonic, the first aim should be to stop all medication that may have been deemed necessary. The patient should be allowed to begin to sit up before he is allowed solid food. The return to his regular diet should be very gradual, adding first one article of food and then another, and noting the amount of indigestion that it may cause.

Constipation is the most troublesome symptom to treat, and is almost invariably present. The best laxative to use is cascara in sufficient dose, and perhaps best in small doses three times a day, one of the better tasting fluid preparations being selected.

Baldness.

The following is recommended by Ewald (*La Tribune Médicale*, January, 1907):

℞.	gm. or c.c.		
Tincturæ cantharidis	5		fl℥i
Balsami peruviani	10		℥iiss
Olei rosmarini	2	or	m. xxx
Ceræ albæ	10		℥iiss
Petrolati	75		℥iiss

M. et sig.: Rub a small portion daily into the bald scalp.

A Dusting Powder for Rubber Gloves.

℞.	gm. or c.c.		
Alumini sulphatis			
Acidi borici, ... ää	15	or	℥ss

M. et sig.: Use for powdering the inside of rubber gloves to prevent perspiration.—*Medical Review of Reviews.*

Pharmacology

Liquid Predigested Foods.

The *Lancet* (London), comments on the report on the so-called medicinal foods (THE JOURNAL, May 11, 1907, 1612, and June 1, 1866) as follows:

The Council on Pharmacy and Chemistry of the American Medical Association has recently published a report by a subcommittee which was appointed to examine the various "liquid foods," "medicinal foods," or "predigested foods," as found on the market in large numbers. These foods are solutions containing as the essential constituents small amounts of protein substances and carbohydrates preserved by alcohol. In the preparation of such foods the protein substances should be converted into soluble peptones and proteoses by means of enzymes. The protein content of the various liquid foods examined ranged from 0.5 to more than 6 per cent. The carbohydrates present, amounting to from 0.55 to more than 15 per cent., included sucrose, maltose, glucose, invert sugar, and dextrin. The amount of alcohol varied from 12 to 19 per cent. Some of the foods contained a large proportion of glycerin. Their nutritive value depends on the amounts of protein and carbohydrate present, and these in many of the cases examined

represented only one-third the calorific value of milk, while but a few possessed twice the calorific value of milk. The Council has concluded that none of the commercial liquid medicinal foods examined contain sufficient food material to maintain normal nutrition. A man doing moderate work requires an amount of food capable of supplying energy equal to 3,000 calories per day and in sickness about one-half this amount. The average daily dose of the "liquid foods" supplies only from 10 to 111 calories, based on the protein and carbohydrate present. It is calculated that to sustain the vitality of a patient during a serious illness about 2 liters of milk, giving 1,430 calories, are required. Even if the alcohol is considered to have direct food value it would be necessary to administer from 700 to 1,500 c.c. of the "medicinal foods" to supply the same amount of energy. But in many cases the amount of alcohol exhibited by these quantities would keep the patient in a continuous state of alcoholic stupor. From these considerations it is clear that a patient would starve when these preparations are given in the doses that are recommended. Unless the advised daily dose of a "liquid food" contains at least 100 calories, exclusive of alcohol and glycerin, it should not be depended on to sustain life even for a limited period. The Council recommends that "liquid foods" should yield at least 8.8 per cent. of solids on evaporation and should possess at least as much nutritive value as milk. One-fourth of the nutritive value, exclusive of alcohol and glycerin, should reside in the nitrogenous matter. Further, the protein matter should be converted by enzymes—e. g., pepsin and pancreatin—and not by acids or by heat, as it is held by some observers that the products in the last-named cases may be toxic and dangerous.

Purity of Commercial Hexamethylenamin.

The publicity given in these columns to the fact that hexamethylene tetramin, which was placed in the last edition of the Pharmacopeia as hexamethylenamin, is on the market under a variety of names, as, for instance, aminoform, formin, cystogen, uriform, hexamin, etc., has caused some of these proprietaries to be advertised as superior to and purer than all others—hence to be preferred by the physician; physicians, therefore, should indicate these in their prescriptions. To determine whether or not any such claims are true, Daniel Base, professor of chemistry in the department of pharmacy of the University of Maryland, made an examination of the various brands on the market, including commercial samples of the drug under the official name and also samples that sold under various trade names. His results show that all the brands are free from more than a trace of ammonia or formaldehyd, and that the strength of all is practically the same, closely approximating 100 per cent., and pure. Hence, we may feel sure that in prescribing the substance by its official title, we shall get as good an article as if we should specify any one of the proprietary preparations. It is certainly encouraging to learn of such disinterested investigation, and it is to be hoped other pharmaceutical and medical schools will encourage such investigation as this by Professor Base.

Fighting the Substitution Evil.

In all lines of commercial life the evil of substitution has reached such proportions as to demand serious attention. Numerous high-class magazines have instituted an aggressive campaign against this particularly contemptible form of fraud, and the public is being educated to refuse the "just as good" article and accept only the product called for. To the physician, as a purchaser of drugs, either for himself or by prescriptions for his patients, this question appeals with particular force. In the purchase of ordinary merchandise, the substitution of an inferior and cheaper product by the retailer results only in disappointment and monetary loss. In the purchase of medicines on prescription, however, the health and possibly the life of the patient is at stake, as well as the professional reputation of the physician. Scientific accuracy in the treatment of disease is an impossibility unless the physician may be assured that the drug for which he calls is invariably furnished. It is gratifying to find one of the large pharmaceutical houses attacking the substitution evil in an energetic and effective way. This firm has had prescriptions, calling for one of its particular products, an official preparation, presented at various drug stores in the larger cities. The drugs as dispensed were sealed and delivered to the firm and then subjected to analysis. When substitutes have been dispensed, the name and address of the druggist perpetrating the fraud have been printed in an explanatory form letter and mailed to physicians in the same city. This seems an eminently equitable way of dealing with men who are willing to play fast and loose with the health of the physician's patients and the reputation of the physician himself.

The point is not whether a certain firm's products are one of the best or whether they are even good. It is right to assume that when a physician calls for a drug made by a particular firm he has found by clinical experience that that drug gives a definite therapeutic effect which he can interpret. It is also fair to assume that any firm putting out a given product that by its quality establishes a demand shall have some assurance that an inferior article will not be substituted when its own preparations are called for. The prevalence of the substitution evil is one of the things that makes pharmaceutical houses hesitate to sell their products under the scientific name, relying on the physician to designate the particular brand of drug wanted. The result is the thousand and one trademarked names that exist to the confusion of pharmacology and the detriment of scientific medicine.

Correspondence

A New Disease.

FREDERICK, S. D., Sept. 9, 1907.

To the Editor:—In the northeastern part of South Dakota and the southeastern part of North Dakota during the last few weeks an epidemic has appeared of what is apparently a new infectious disease. I have seen about sixty cases and other physicians have had a similar experience. None of them, so far as I know, has made a definite diagnosis, and those with whom I have conversed have considered it a new disease. The malady attacks children and young adults by preference; I have seen but three cases in people over 35. The symptoms seem to be more severe in patients from 20 to 35 years of age. The proportion of females attacked to that of males is as three to one. Many more cases occur during the hot, dry days than during the moist, cool ones. As to condition of life, there are just as many victims among the well-to-do and well nourished as among the poor and poorly nourished. Loss of sleep, worry and overwork seem to be strong predisposing factors. I have noted that those affected have used milk largely as a beverage, and this may account for the greater prevalence among women and children.

Symptoms: The incubation period is unknown. The patient complains of chilly sensations, general aching, anorexia, and colicky pains about the umbilicus. These are followed by a terrific headache coming on suddenly and reaching its maximum in twenty-four hours. Very severe pain in the eyeball is complained of and there is intense photophobia. Severe pain in the back of the neck and in the lumbar region is felt. The temperature rises to about 102.5 F. at the end of the second twenty-four hours and gradually declines to become normal or subnormal on the third or fourth day. Violent emesis occurs during the second, third or fourth day and seems to afford transient relief. Generally, the patients are constipated through the attack, but some suffer from diarrhea during convalescence. The pulse is about 100, but drops to 40 or 50 as temperature declines to normal. Patients suffer much from cold extremities during and after an attack.

Some patients are almost maniacal; all moan and groan much, and occasionally one is slightly comatose for a couple of days, especially if the kidneys are affected. Albuminuria is present in most cases, sometimes of severe grade. Pain in the eyeball is the last symptom to disappear, and patients complain of being "light-headed" for some days. The pupils are equal and react to light. There is no strabismus, no retraction of the head and no Kernig's sign. In the severe cases some impairment of hearing has been noted for some weeks after an attack. There are no fatalities.

Treatment is not satisfactory. The only measures which I have found of value are free purgation with calomel, ice to the head, counter irritation to the back of the neck, hot foot-baths, and confinement to a darkened room. Acetanilid, phenacetin, the bromids, codein, etc., seem to aggravate rather than relieve the pain. Massive doses of morphin hypodermically will give relief for two or three hours, after which the pain seems accentuated. I have given up the use of all analgesics except, perhaps, one hypodermic of morphin in exceptionally severe cases.

Owing to the distance to the nearest laboratory no bacteriologic examinations could be made. My impression is that the disease is due to an infection by way of the gastrointestinal tract and that probably the causative agent is transmitted by infected milk.

If other physicians have seen a disease similar to the one here described it is hoped that they will communicate the results of their experience. W. E. CLARK.

Professor Grancher's Work on Early Diagnosis of Tuberculosis.

ASHEVILLE, N. C., Sept. 27, 1907.

To the Editor:—I wish to add a few words to your notice in THE JOURNAL, August 10, of the death, on July 13, of Prof. J. J. Grancher of Paris. It was not my privilege to know this great teacher personally, but the profession is indebted to him for his superb work, "*Maladies de l'Appareil Respiratoire, Auscultation et Tuberculose*," one of the keenest and most masterful analyses of the signs, especially of the auscultatory signs, of tuberculosis. This book, more than any other, probably, has influenced the modern views of these signs in this disease, and, it is to be regretted, is too little known in this country. It seems appropriate that his death should serve to call it to the attention of our profession. The main facts of his useful life, his activity in the crusade against tuberculosis in childhood, etc., were brought out, but THE JOURNAL failed to dwell on his position as a leader in the study of the early signs of tuberculosis of the lungs. German medical works are so excellent that in this country we are apt to turn to them alone, of those in foreign languages, and to neglect other authors; but, whatever be the relative value of the medical works of France or Germany, Grancher's "Respiratory Diseases" is a book American physicians can not afford to neglect. Many of the views advanced in it, as to the early signs of tuberculosis, have been adopted by most of the advanced leaders of medical thought in this line, such men as Turban and Sahli acknowledging their correctness. So original a work is sure to stimulate thought, and every physician will find in it valuable suggestions. I trust that some one may translate it and thus put it within the reach of all. I need not here refer to his other work independently or in connection with the great Pasteur, for I have written only to lay stress on his distinguished services as a diagnostician. Like the great Laennec, he died finally of the disease, whose terrors he did so much to mitigate, after fighting it in his own body for thirty years; but in France, and let us hope in other lands also, he will not soon be forgotten, and his teachings will be a not unimportant step in that road which is slowly but surely leading us to the truth. CHARLES L. MINOR.

Relation of Albuminous Putrefaction in the Intestines to Arthritis Deformans.—Andrews and Hoke, in the *American Journal of Orthopedic Surgery*, state that though so far no measures have been carried out with the object of increasing tonicity of the stomach and intestinal musculature, this must constitute an important factor in the treatment. Stress must also be laid on a certain amount of daily outdoor exercise. There is a profound change in the metabolism of the tissues of the entire body, and when exercise can not be taken, massage is of great value. The patients must have a great deal of fresh air when sleeping. The function of the skin must be stimulated and the skin utilized as an emunctory by the use of baths and hot air. In a large proportion of cases in which serious joint changes have taken place, relief is impossible without an appropriate combination of surgical operation, treatment with apparatus and the general medical and dietetic measures outlined.

Book Notices

SURGERY, ITS PRINCIPLES AND PRACTICE, by Various Authors. Edited by William Williams Keen, M.D., LL.D., Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Volume II, with 579 Illustrations. Cloth. Pp. 920. Price, $7.00 net. Philadelphia: W. B. Saunders Company, 1907.

In this volume are considered the "Diseases of Bones and Joints," "Fractures," "Dislocations," "Orthopedics," and "Diseases of the Muscles, Lymphatics, Skin, Nerves and Spine." The chief criticism to be made of the chapter on "Diseases of the Bones" is that in many places it is too condensed and lacks in detail. For instance, tuberculosis of bone is covered in three pages, more than half of one of which is occupied by an illustration. This subject is too important to be dismissed so cursorily in a work of this magnitude. In the treatment of chronic bone abscesses to advise one "to sterilize as far as possible such a cavity and then fill it with blood clot, close the skin over the clot and trust to the organization of the clot," is not giving sufficient detail to enable one unfamiliar with the technic to employ the method successfully. The chapter on tumors of the bones is very disappointing on account of its extreme brevity.

Fractures and dislocations are covered in a satisfactory manner and commendable conservatism shown regarding the question of operating on simple uncomplicated fractures which seems to be the present-day rage of some operators. Diseases of the joints are described very concisely and briefly, and while both of these are excellent qualities, they may be carried too far, as is frequently done here. For instance, the practitioner who is looking for advice as to the treatment of some of his joint cases will be disappointed on finding too frequently the simple sentence, "No satisfactory treatment has been formulated."

The pathology of the surgical disorders of the nervous system is well presented, but the subject is left in an unsatisfactory condition because of the omission of the clinical side. A chapter which deserves particular mention is that on "Traumatic Neurasthenia, Traumatic Hysteria and Traumatic Insanity." These subjects are presented in a clear, instructive and practical manner and should be carefully studied by every one who has to deal with personal injury cases, concerning which so much fraud is constantly practiced. Under the treatment of tic douloureux no mention is made of intracranial operations, although much space is devoted to peripheral operations which find little use at the present time.

The chapter on "Surgical Diseases of the Skin and Surgical Diseases of the Spine" are very good, and under the latter the author very properly discourages promiscuous operations on fractures of the spine with injury to the cord, which are sometimes performed with the vain hope that if nothing is gained nothing can be lost. The workmanship and general makeup of the volume are fully in keeping with that of the first volume previously mentioned in these pages.

TEXT-BOOK OF PHYSIOLOGIC CHEMISTRY for Students of Medicine and Physicians. By Charles E. Simon, B.A., M.D. Professor of Clinical Pathology at the Baltimore Medical College. Third Edition, Thoroughly Revised. Cloth. Pp. 490. Price, $3.25. Philadelphia and New York: Lea Bros. & Co., 1907.

In this edition the author has endeavored to bring the treatise up to date without increasing the size; this has been a somewhat difficult task, considering the amount of literature put forth within the last three years. The task seems, however, to have been accomplished satisfactorily and the work still retains its well-deserved position among reliable textbooks on this important subject.

CARE OF THE BABY. A Manual for Mothers and Nurses, Containing Practical Directions for the Management of Infancy and Childhood in Health and Disease. By J. P. Crozer Griffith, M.D., Clinical Professor of Diseases of Children in the University of Pennsylvania. Fourth Edition, Thoroughly Revised. Cloth. Pp. 455. Price, $1.50 net. Philadelphia: W. B. Saunders Co., 1907.

This little book has been improved by addition of matter necessary to bring the text up to date and of a large number of illustrations. The advice to mothers and prospective mothers is sound and not calculated to teach parents to dispense with a physician's advice, but rather to teach them the indications for consulting a physician. Some of the formulas for

lotions and other local applicants might well have been omitted from a book intended for the laity, as also formulas in the appendix for such things as laxative alkaline mixture, chalk and bismuth mixture, and Jeaunel's general antidote for poisoning. The second appendix contains a description of some of the principles of infant feeding, and in it the author urges on mothers the entire avoidance of the responsibility of the selection of an infant's diet. On the whole the book is more suited for nurses than for the laity.

MANUAL OF DISEASES OF THE EAR, NOSE AND THROAT. By John H. Johnson Kyle, B.S., M.D., Professor of Clinical Otology, Rhinology and Laryngology in the Medical College of Indiana, Department of Medicine of Purdue University. Second Edition, Revised and Enlarged. With 169 Illustrations. Flexible Leather. Pp. 627. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co., 1907.

The book takes up in order embryology, normal anatomy, bacteriology and pathology, methods of examination, special instruments, general therapeutics of the ear, nose and throat, then the various diseases. Its handy size and neat morocco binding make it an attractive as well as useful addition to the practitioner's library.

MATERIA MEDICA AND PHARMACY. By Reynold Webb Wilcox, M.A., M.D., LL.D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital, etc. Seventh Edition, Revised. Cloth. Pp. 490. Price, $2.50 net. Philadelphia: P. Blakiston's Son & Co., 1907.

In this edition every effort at condensation has been made so far as compatible with clearness. The botanical classification of drugs of vegetable origin has been abandoned for one based on therapeutic effect. A similar plan has been followed with drugs of animal origin, but it is somewhat surprising to see cantharides classed as having a mechanical action. By the process of condensation the size of the book has been reduced from 598 to 468 pages.

MORRIS'S HUMAN ANATOMY. A Complete Systematic Treatise by English and American Authors. Edited by Henry Morris, M.A., and M.B., Lond., F.R.C.S. Eng., President of the Royal College of Surgeons, England, and J. Playfair McMurrich, A.M., Ph.D., Professor of Anatomy, University of Michigan. Illustrated. Fourth Edition, Revised and Enlarged. In Five Parts. Cloth. Part IV. Organs of Digestion, Etc.: Price $1.50. Part V, Surgical and Topographical Anatomy; Price, $1.00. Philadelphia: P. Blakiston's Son & Co., 1907.

Parts IV and V of Morris's Anatomy complete the work and are of the same character of the volumes that have been previously reviewed. Part IV takes up the anatomy of the viscera and Part V treats of topographic and surgical anatomy. The treatment in both sections is satisfactory and these parts are among the most useful sections of the work.

PRACTICAL MEDICINE SERIES. Under the General Editorial Charge of Gustavus P. Head, M.D., Professor of Laryngology and Rhinology, Chicago Postgraduate Medical School. Vol. III. The Eye, Ear, Nose and Throat. Edited by C. A. Wood, C.M., M.D., D.C.L., A. H. Andrews, M.D., and G. P. Head, M.D. Series 1907. Cloth. Pp. 353. Price, $1.50. Chicago: The Year Book Publishers.

This volume purports to give the most important facts brought out in the literature of the preceding year. It contains forty-one illustrations and sixteen full-page plates, showing interesting anatomic conditions and specimens, improved instruments and methods of procedure.

Association News

NEW MEMBERS.

List of new members of the American Medical Association for the month of September, 1907:

ALABAMA.

Carswell, F. L., New Decatur.
Cooper, J. B., Birmingham.
Dinsmore, W. W., Decatur.
Dixon, D. P., Talladega.
Holliday, W. H., Birmingham.
Jones, T. C., Athens.
Lewis, F. P., East Birmingham.
Long, Clarence, Harris.
Moorman, Marion R., Huntsville.
Walker, A. A., Birmingham.

ARIZONA.

Bledsoe, N. C., Bisbee.
Cassady, David, Bisbee.

ARKANSAS.

Arkebauer, Charles, Little Rock.
Bell, C. W., Greenwood.
Borum, W. H., Blytheville.
Cowle, Fannie W., Hot Springs.
Hassell, J. W., Searcy.
Jones, E. B., Hartford.
Kennedy, E. L., Marmaduke.
King, J. M., Greenwood.
Love, J. G., Hartman.
Madole, B. W., Danville.
McGill, A. G. Chidester.
McMahan, J. E., Kendall.
Moore, J. A., Lisbon.
Pickett, B. E., Ravenden Springs.
Powell, M. F., Alexander.
Puckett, O. E., Fitzhugh.
Shaw, J. B., Sheridan.

CALIFORNIA.

Cluness, W. R., San Francisco.
Davidson, J. D., Fresno.
Evans, C. W., Los Angeles.
Fisher, J. T., Los Angeles.
Griswold, C. H., Modesto.
MacKay, Emma S., Berkeley.
Mix, P. A., Towle.

COLORADO.

Coltrin, F. D., Grand Junction.
Goodloe, Hart, Canon City.
Graham, E. V., Silver Plume.
Lennox, P. M., Colorado Springs.

CONNECTICUT.

Wight, G. D., Bethel.

DELAWARE.

Cooper, Smith, Wilmington.

DISTRICT OF COLUMBIA.

Boyd, G. W., Washington.

FLORIDA.

Baer, Herman, Bradentown.

GEORGIA.

Vinson, S. L., Nichols.

ILLINOIS.

Atkeisson, J. E. H., Chicago.
Conklin, Alice I., Chicago.
Ferguson, E. C., Edwardsville.
Friedrich, L. H., Chicago.
Hewins, C. F., Loda.
Jacobs, E. H., Chicago.
Markley, R. W., Elgin.
Metcalf, H. L., Springfield.
Miller, R. N., Ellery.
Patton, Adelma G., Monmouth.
Trovillion, C. E., Metropolis.

INDIANA.

Cleveland, W. R., Evansville.
Eberhardt, W., Michigan City.
Luckey, H. R., Seymour.

INDIAN TERRITORY.

Norvell, B. P., Muskogee.

IOWA.

Ellyson, C. W., Alta.
Sheldon, B. L., Cedar Rapids.

KANSAS.

Hughes, P. D., Kansas City.
Mann, C. A., Hutchinson.
Uhls, L. L., Osawatomie.
Wear, R. C., Baxter Springs.

KENTUCKY.

Briggs, W. A., Bowling Green.
Cooper, J. R., Maysville.
Marcum, A. B., Cave City.
Poole, W. A., Henderson.
Stigall, C. G., Burnside.

LOUISIANA.

DeBuys, L. R., New Orleans.
Lawrence, P. A., Dixie.

MAINE.

Fogg, J. S., Biddeford.
Sanborn, J. W., Waldoboro.

MARYLAND.

Caruthers, Fred, Baltimore.
Hachtel, F. W., Baltimore.
Hood, M. B., Baltimore.
Houff, John, Baltimore.
Ullman, Alfred, Baltimore.

MASSACHUSETTS.

Cox, Ann C., Boston.
Dewing, L. A., Boston.
Felch, L. P., Boston.
Hinchey, Richard, Waltham.
Young, Evangeline W., Boston.

MICHIGAN.

Billings, E. P., Ann Arbor.
Bruce, J. D., Saginaw.
Ellis, C. W., Eaton Rapids.
Hays, J. H., Case City.
Keane, W. E., Detroit.
Lamb, E. T., Alma.
Marshall, F. B., Muskegon.
Peebles, A. R., Grand Rapids.
Robinson, G. W., Detroit.
Schorr, R. L., Detroit.
Scrafford, R. E., Ann Arbor.
Treat, D. L., Adrian.

MINNESOTA.

Henderson, M. S., Rochester.
Robinson, J. M., Duluth.
Wölner, H. O., St. Cloud.

MISSISSIPPI.

Patrick, J. B., Learned.

MISSOURI.

Avery, T. W., Dewitt.
Burney, R. H., Freeman.
Chandler, S. W., Cassville.
Chenoweth, L. C., Webb City.
Dinwiddie, T. H., Higbee.
Gibbs, R. T., Mexico.
Hall, W. A., St. Louis.
Kemp, W. P., Hale.
Long, J. S., Joplin.
Long, L. S., St. Joseph.
Patterson, F. A., St. Joseph.
Powers, H. C., Chetwood.
Pugsley, F. N., Kansas City.
Sander, C. A., Marble Hill.
Sanz, George, Webb City.
Shawhan, R. C., Hale.
Varner, A. O., Union Star.
Whittington, W. L., Marshall.

NEBRASKA.

Medders, D. A., Omaha.

NEW HAMPSHIRE.

Bowker, C. H., Berlin (Temp. in Washington, D. C.)
Snow, S. D., North Conway.

NEW JERSEY.

Mace, Margaret, N. Wildwood.

NEW MEXICO.

Holmes, J. G., Alamagordo.
Whicher, C. M., Carlsbad.

NEW YORK.

Barnett, S. S., New York City.
Berry, J. M., Troy.
Brewster, G. F., Middletown.
Callahan, E. J. West New Brighton.
Carey, H. W., Troy.
Colby, G. W., New York City.
Craw, N. A., New York City.
Dunham, Theodore, New York City.
Fraser, R. C., New York City.
Hawley, H. B., Syracuse.
Hess, A. F., New York City.
Kantor, W. L., New York City.
MacGuire, D. P., Tompkinsville.
Mackie, D. H., New York City.
Maloney, F. W., Rochester.
Mosier, F. H., New York City.
Oberle, J. H., New York City.
Parker, J. S., White Plains.
Price, J. A., New York City.
Rogers, E. H., New York City.
Ryan, F. J., Syracuse.
Selden, Robert, Catskill.
Whitney, C. F. S., New York City.
Wollner, Henry, New York City.

NORTH CAROLINA.

Green, T. M., Wilmington.
Patrick, J. E., New Bern.

NORTH DAKOTA.

Berg, S. A., Mayville.
Brown, W. M., St. Thomas.
Kearney, P. F., Glen Ullin.

OHIO.

Dimond, E. B., Toledo.
Fassig, J. M., Zanesville.
Fisher, C. E., Toledo.
Frost, G. M., Hudson.
Jacobi, Frank, Toledo.
Lane, Fred W., Cambridge.
McHenry, J. H., Cleveland.
Ordway, C. S., Toledo.
Ort, W. A., Springfield.
Quick, R. H., Toledo.
Steinfeld, A. M., Columbus.

OKLAHOMA.

Blaylock, T. A., Madill.
Taylor, W. M., Oklahoma.
Wright, W. E., Tulsa.

PENNSYLVANIA.

Carpenter, S. A., Phoenixville.
Crampton, G. S., Philadelphia.
Earley, T. B., Philadelphia.
Elizey, J. M., Philadelphia.
Hamacher, J. K., Mechanicsburg.
Kaucher, C. L., Reading.
Kisner, J. C., Carlisle.
Newbaker, P. C., Danville.
Schultz, W. C., Waynesboro.
Shoemaker, Harvey, Philadelphia.
Shoemaker, J. A., Knox.
Williamson, James, Philadelphia.

SOUTH DAKOTA.

Hyden, Andrew, Alcester.
Jones, E. W., Mt. Vernon.
Keller, S. A., Herrick.

TENNESSEE.

Campbell, W. C., Memphis.
Dunavant, B. N., Memphis.
Dunklin, F. H., Gallatin.
Glasgow, McPheeters, Nashville.
Haskell, L. W., Jr., Memphis.

Hunt, J. C., Nashville.
McCall, J. H., Huntingdon.
Williams, A. B., Memphis.
Wilson, O. H., Nashville.
Woodruff, S. T., Pleasant View.

TEXAS.

Bouldin, W. W., Bay City.
Burford, J. B., Rosebud.
Cansler, H. K., Travis.
Craven, A. R., Elm Mott.
Currie, D. B., Kerens.
Dean, T. R., Whitney.
Etter, W. F., Rodgers.
Horn, J. M., Pendletonville.
Martin, J. B., Brandon.
McClung, J. E., Corsicana.
Palmer, E. E., Kerrville.
Sadler, T. B., Corsicana.
Youngblood, D. J. R., Brandon.

VERMONT.

Flagg, R. C., Westford.

VIRGINIA.

Jones, C. P., Newport News.
Mulford, E. R., Red Hill.
Northington, J. M., Stonega.

WASHINGTON.

Foreman, B. H., Tacoma.
McCoy, W. M., Wenatchee.

WEST VIRGINIA.

Daniels, H. W., Elkins.
Talbott, L. W., Talmansville.

WISCONSIN.

Fischer, A. M., Kaukauna.
Tuffley, F. S., Livingston.
Young, J. G., Genoa Junction.

Marriages

JOHN H. CROSBY, M.D., to Miss Fannie R. Cross, both of Otsego, Mich., June 17.

JOHN B. COOK, M.D., to Miss Marian Bear, both of Los Angeles, Cal., September 23.

FRANK S. MAXSON, M.D., to Miss Phylanca Linderman, both of Osseo, Wis., September 11.

JESSE H. BROWN, M.D., Philadelphia, to Miss Nellie Porter, at Loretto, Md., September 26.

CHARLES W. HEYWOOD, M.D., to Miss Helen Louise Soper, both of Riverside, Ill., October 7.

GEORGE RIEBEL, M.D., Columbus, Ohio, to Miss Helen Scoop, of Granville, Ohio, September 25.

J. FRED WAGNER, M.D., Allentown, Pa., to Miss Jenny G. Flory, of Sayre, Pa., September 25.

RICHARD A. WARNER, M.D., U.S.N., to Miss Mary S. Ransdell, at Washington, D. C., September 26.

JOHN WALTER HUSTON, M.D., Virginia, Ill., to Miss Estelle Wood, of Caro, Mich., September 18.

EVAN J. SMITH, M.D., Irvington, N. Y., to Miss Gertrude L. Chesley, of Malone, N. Y., October 9.

GEORGE H. FAHRING, M.D., to Miss Octavia Perusella Scharer, both of Anahuac, Texas, September 18.

CHARLES MCMAHON, M.D., Hibbing, Minn., to Miss Grace Cooper of Adrian, Minn., September 18.

ALLEN H. PEEK, M.D., Betteravia, Cal., to Miss Ethel E. C. Wright, of Palo Alto, Cal., September 18.

WILLIAM H. GILBERT, M.D., Evansville, Ind., to Miss Lillian Williams, in New York City, September 23.

JOHN H. MILLER, M.D., Wallingford, Vt., to Miss Jessie Campbell, of Burlington, Vt., September 19.

JAMES FRANK DONALDSON, M.D., Salem, Mass., to Miss Roma Blanchard, of Dorchester, Boston, October 1.

ALEXANDER BAYLY HAYWARD, M.D., U.S.N., to Miss Anna Stewart Hess, of Philadelphia, September 28.

THOMAS H. KELLEY, M.D., Chicago, to Miss Sarah Byrde Buchan, of Stevens Point, Wis., September 26.

EUGENE E. MATTISON, M.D., Pasadena, Cal., to Miss Laura Degen Munn, of Los Angeles, Cal., October 8.

ROBERT S. STARR, M.D., Hartford, Conn., to Miss Sarah DeForest Edwards, of Landsboro, Mass., October 9.

WILFRED D. SHARP, M.D., London, Ohio, to Miss Maude V. Cochran, of McConnelsville, Ohio, September 25.

A. JEROME HERMANN, M.D., Middleburg, Pa., to Miss Carrie S. Stine, of East End, York, Pa., September 26.

BYRON EDGAR GIANNINI, M.D., Providence, Ky., to Miss Frances May, of Central City, Ky., September 25.

FREDERICK SCHROEDER, JR., M.D., Brooklyn, N. Y., to Miss Sadie Jane Peck, of New York City, September 11.

MORTON PHELPS DICKISON, M.D., to Miss Alice Smith Baker, both of Media, Pa., at Rockdale, Pa., September 20.

CHARLES BRADLEY RUSSELL, M.D., Paterson, N. J., to Miss Harriet Dunham, of Pittsfield, Mass., September 30.

CARL RUDOLPH KRONE, M.D., to Miss Louise Adams Moore, both of Oakland, Cal., at Brookdale, Cal., September 23.

HENRY S. PEARSON, M.D., New York City, to Mrs. Minnie Hatch McCartney, of New Hope, Gallion, Ala., October 3.

J. LESTER BARNSBACK, M.D., Chicago, to Mrs. Virginia Camp-Bishop, of Columbus, Ga., at Terre Haute, Ind., September 28.

Deaths

Charles Dexter Cleveland, M.D. University of Louisville (Ky.) Medical Department, 1847; a pioneer practitioner of California, and for a time editor of the San Francisco *Examiner*, but who had lived since the San Francisco earthquake with his daughter in Berkeley, died at the Roosevelt Hospital, Berkeley, September 20, from the effects of a wound of the throat, believed to have been self-administered while despondent from ill health, aged 83.

J. Henry Jackson, M.D. University of Vermont, Burlington, 1865; professor of physiology in his alma mater; formerly president of the Vermont Medical Society; member of the Washington County Medical Society, and mayor of Barre, Vt., one of the incorporators and president of the Barre Hospital, died at his home in Barre, September 13, from complications, following an operation for appendicitis three days before, aged 63.

John Baldwin Welwood, M.D. Bellevue Hospital Medical College, New York City, 1880; of Roslyn, N. Y.; a member of the medical societies of the State of New York and County of Nassau; died at the home of his sister in Wantagh, L. I., September 26, from the effects of a stab wound of the groin, believed to have been self-inflicted, while suffering from insomnia and melancholia, following typhoid fever, aged 50.

Samuel Lewengood, M.D. Bellevue Hospital Medical College, New York City, 1882; a member of the American Medical Association; formerly an interne in Bellevue Hospital, lecturer and assistant professor in the Post-Graduate School from 1885 to 1888, and a member of the staff of the out-door department of Mt. Sinai Hospital from 1884 to 1893, died at his home in New York City, September 9, aged 46.

J. Henry C. Simes, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1870; of Bala, Pa.; a member of the College of Physicians of Philadelphia; one of the founders of, and emeritus professor of genitourinary and venereal diseases in the Philadelphia Polyclinic and formerly surgeon to the Episcopal Hospital, Philadelphia, died at Cape May, N. J., September 28, aged 63.

Henry W. Kitchen, M.D. University of Wooster, Medical Department, Cleveland, 1871; a veteran of the Civil War and president of the State Banking and Trust Co. of Cleveland; clerk of Cuyahoga County from 1882 to 1888, and for one term health officer of Cleveland, died at his home in that city, from cerebral hemorrhage, September 30, after an illness of three days, aged 64.

Joseph T. Smith, M.D. Cleveland Medical College, Medical Department of Western Reserve University, 1855; formerly of Collinwood, Ohio; surgeon of the Second Ohio Volunteer Cavalry during the Civil War, and after the war collector of internal revenue in Mississippi, died at his home in Long Beach, Cal., September 26, from tuberculosis, after a long illness, aged 77.

Samuel G. Irwin, M.D. Rush Medical College, Chicago, 1863; one of the oldest practitioners of Crawfordsville, Ind., died at the home of his son in Champaign, Ill., September 29, from senile debility aggravated by a fracture of the hip, received six years before, aged 82. The members of the Montgomery County Medical Society attended the funeral in a body.

Almon Benton Coulter, M.D. Western Reserve University Medical College, Cleveland, 1882; of Cedar Rapids, Iowa; a member of the Iowa State and Linn County medical societies; for six years assistant at the Western Pennsylvania Hospital for the Insane, Warren, died at Lake Okoboji, Iowa, after an illness of about two years, September 27, aged 52.

Ezekiel Houston, M.D. Missouri Medical College, St. Louis, 1886; a member of the American Medical Association, professor of materia medica and therapeutics in Northwestern Medical College, St. Joseph, Mo., and professor of physical diagnosis in Central Medical College of St. Joseph, died at his home in Savannah, Mo., October 2, aged 58.

Andrew G. Guiler, M.D. College of Physicians and Surgeons, Baltimore, Md., 1879; local surgeon of the Pittsburg and Lake Erie Railroad and a well-known practitioner of the Monongahela Valley; secretary of the school board and a member of the Board of Health of Belle Vernon, Pa., died at his home in that place, September 24, aged 48.

James Kleckner, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1887; a member of the Medical Society of the State of Pennsylvania and president of the Union County Medical Society; postmaster of Mifflinburg, Pa., under the Cleveland administration, died at his home in Mifflinburg, September 20, aged 57.

David A. Knapp, M.D. New York University Medical College, 1845; a member of the Medical Society of the State of New York and a charter member of the Dutchess County Medical Society; for more than 60 years a practitioner of the county, died at his home in North Clove, N. Y., September 22, aged 87.

James T. Dodd, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1882; for 58 years a practitioner of medicine and a surgeon in the Confederate service during the Civil War, died at his home in Atlanta, September 24, from cerebral hemorrhage, after a short illness, aged 77.

Vivian Daniel, M.D. Medical School of Harvard University, Boston, 1896; a member of the American Medical Association; a practitioner of Watertown, Mass., and a member of the staff of the Waltham Hospital, died in that institution, September 25, two weeks after an operation for appendicitis.

James F. R. Appleby, M.D. Georgetown University School of Medicine, Washington, D. C., 1868; a member of the Medical Society of the District of Columbia; died at his home in Georgetown, D. C., September 27, from heart disease, after an illness of several months, aged 67.

Walter Branch Fayerman, M.D. Leonard School of Medicine, Medical Department of Shaw University, Raleigh, N. C., 1896; a member of the American Medical Association and formerly a practitioner of Atlantic City, N. J.; died recently at his home in Petersburg, Va.

Benjamin Franklin Drake M.D. Cleveland University of Medicine and Surgery, 1872; formerly of Pittsburg, Pa., and later of Pasadena, Cal., died at his summer home, Ocean Park, Cal., September 24, from nephritis, after an illness of several years, aged 75.

William Stark De Golia, M.D. Albany, (N. Y.) Medical College, 1882; a member of the Upper Cumberland Medical Society, and local surgeon for the Southern Railroad, died at his home in Crossville, Tenn., September 19, aged 51.

Lyman Paul Walter, M.D. Starling Medical College, Columbus, Ohio, 1881; died at his home in Sycamore, Ohio, September 20, from disease of the stomach and heart, after a prolonged period of invalidism, aged 50.

John W. Reakirt, M.D. University of Wooster, Medical Department, Cleveland, 1898; formerly a practitioner of Cincinnati, was found dead in his office in Cleveland, from cerebral hemorrhage, September 19, aged 43.

John L. Peppard, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1865; a practitioner of Great Village, N. S., died September 21, from the effects of strychnin, accidentally self-administered, aged 70.

H. C. Hull, M.D. Eclectic Medical Institute, Cincinnati, 1853; for more than 50 years a practitioner of Washington County, Iowa, died at his home in Crawfordsville, September 27, after a brief illness, aged 81.

Ira C. Williams, M.D. Long Island College Hospital, Brooklyn, N. Y., 1873; died at his home in Cheboygan, Mich., from cerebral hemorrhage, September 21, after an illness of a few hours, aged 56.

Beecher W. Braley, M.D. University of Vermont, Medical Department, Burlington, 1875; died at his home in Barre, Vt., September 24, from pneumonia, after an illness of one week, aged 53.

Samuel S. Murphy, M.D. Medical College of Alabama, Mobile, 1881; one of the oldest practitioners of Greene County, Ala., died at the home of his son in Aliceville, Ala., September 26, aged 81.

Moses B. Reed, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1888; of Council Bluffs, Iowa, died suddenly in Tecumseh, Neb., September 25, from angina pectoris, aged 71.

Albert L. Closson, M.D. Philadelphia College of Medicine and Surgery, 1863; one of the oldest practitioners of Hunterdon County, N. J., died at his home in Lambertville, September 26.

Thomas W. Addison, M.D. Howard University, Medical Department, Washington, D. C., 1886; a colored practitioner of Hampton, Va.; died at his home in that city, September 24.

Rudolph F. Pries, M.D. California Medical College, San Francisco, 1880; of Omaha, died at the General Hospital in that city, September 21, after a surgical operation, aged 78.

Pantaleon Candidus, M.D. College of Physicians and Surgeons in the City of New York, 1872; died at his home in Williamsburg, Brooklyn, September 25, aged 75.

Brent McBeath, M.D. Missouri Medical College, St. Louis, 1882; died suddenly at his home in Mercer, Mo., September 13, aged 47.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

SCOPOLAMIN-MORPHIN ANESTHESIA.

DALLAS, TEXAS, Sept. 28, 1907.

To the Editor:—Where can I find short and detailed information concerning the administration of scopolamin-morphin injections in labor cases? E. ARONSON.

ANSWER.—Gauss has very carefully elaborated the technic of scopolamin-morphin anesthesia in labor (*Centrlbl. f. Gynäk.*, Jan. 12, 1907). This article was abstracted in THE JOURNAL, March 9, 1907, page 912; another article by the same author was abstracted in THE JOURNAL, March 16, 1907, page 983. His ideal is to produce a state in which the patient perceives but does not remember what is going on around her. She is carefully guarded from rising into full consciousness or lapsing into narcosis by repeated tests of her memory. Some object is shown her, and at the end of twenty to thirty minutes it is recalled to her attention. If she remembers seeing it before, the slumber is not deep enough and a new dose is given. The labor goes on the objects used to test the memory are varied and a record is kept of the responses of the patient to these repeated tests. The first dose consists of 0.01 gm. (1/6 grain) of morphin and 0.0003 gm. (1/230 grain) or sometimes 0.00045 gm. (1/150 grain) of scopolamin. The doses are measured from separate solutions of the alkaloids and given hypodermatically. By using separate solutions the dose of each may be graduated to suit the exigencies of the particular case. If the first test of the attention made three-fourths to one hour after the first injection shows memory of sensation a second dose of 0.0003 or 0.00015 gm. (1/230 or 1/460 grain) of scopolamin is given, but no morphin, and from this time on the scopolamin is given almost always without morphin. If the slumber is deep enough the dose is postponed until the tests show returning memory. The amount needed varies from 0.00075 to 0.0009 gm. of scopolamin (1/90 to 1/75 grain). Seldom is 0.003 gm. (1/260 grain) sufficient and occasionally 0.0012 gm. (1/55 grain) is necessary. Gauss states that a continuous absence of memory has been attained by this method in 72 per cent. of 1,000 births. He warns against beginning with too large a dose or too early or adopting the method where there is uterine inertia as shown by weakness of the pains.

These details show the great care with which this method has been worked out, the inherent dangers having been carefully kept in view. The careful graduation of doses and the omission of morphin in the later stages make it impracticable to carry out the method with mixtures of the two alkaloids in solution or with compound tablets; furthermore, the careful watching of the patient necessary for record of her memory precludes the physician from leaving her except in the charge of an intelligent trained nurse.

In the *Archiv. f. Gynäkologie* (lxxxi, No. 2) W. Steffen gives a review of the history of the use of scopolamin-morphin in obstetrics, which is abstracted in THE JOURNAL, May 25, 1907, page 1821. In this he includes the reports of Gauss, Leopold and others, and his conclusions are: "1. The method does not accomplish the desired results. 2. It can not be regarded as harmless for mother and child. 3. It is not to be recommended for use in private practice, as the by-effects which are liable to develop make it necessary that medical aid can be summoned at any moment."

It is important to take note of these cautions, lest careless use of the method result in unnecessary sacrifice of infant life.

OXIEN TABLETS.

To the Editor:—Enclosed find circular which was handed to me by a patient. What is the composition of Oxien tablets? Do they contain acetanilid? I would like to be able to tell my patient the dangers of the medicine, if any. S. Y. R.

ANSWER.—In a report of the work done by the German government at the institute for the examination of foods and drugs, recently published in the *Berichte der Deutschen Pharmazeutischen Gesellschaft*, 1907, page 276, it is stated that Oxien tablets were found to be a mixture of milk sugar, cane sugar, corn starch, oil of sassafras, oil of wintergreen and a bitter principle. The tablets were colored red with eosin. This is the only information which we have.

VEGETABLE UNITS.

BOSTON, Oct. 2, 1907.

To the Editor:—Your apt illustrations of the use of vegetables for units of measurement, in THE JOURNAL, Sept. 28, 1907, page 1121, should have included the origin of the linear measure still in use, beginning "3 barley corns make one inch," as well as the more familiar example of "lump of chalk." S.

ESTABLISHMENT OF COLLATERAL CIRCULATION IN ANEURISM.

PITTSBURG, PA., Sept. 24, 1907.

To the Editor:—Can you refer me to some literature bearing on the gradual occlusion of the artery in an attempt to establish a collateral circulation in aneurism? I have been unable to find anything on the subject in my reading. J. D. S.

ANSWER.—The idea of favoring the formation of collateral circulation by preliminary compression of the artery before operating on aneurism has frequently been expressed by surgeons and will be found mentioned in *"Traite de Chirurgie"* by Duplay and Reclus and by Delbet in his *"Traite de Chirurgie,"* also in an article by Kolb, *Beitrage zur klin. Chir.*, xliii, p. 627. In this article particular stress is laid on the value of increasing collateral circulation as a preliminary step to operating on the aneurism, and cases are detailed in which the method was employed. In an article entitled "Gradual Occlusion of Large Arteries" by Stratton, *Annals of Surg.*, xxxviii, p. 256, the author presents some experimental work and mentions an instrument fashioned after the principle of an ecrasseur which he used to produce gradual occlusion of the artery by slowly tightening a screw.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ended Oct. 5, 1907:

Kendall, W. P., surgeon, granted 30 days' leave of absence on surgeon's certificate of disability.

Morse, C. F., asst.-surgeon, left Fort Howard, Md., on leave of absence for ten days.

Le Wald, L. T., asst.-surgeon, left Fort Slocum, N. Y., on leave of absence for fourteen days.

Phalen, J. M., asst.-surgeon, order for sailing October 5, for Philippines revoked; after discharge from witness duty before U. S. court, will proceed by first available transport to Philippine service.

Boyer, P. L., asst.-surgeon, granted leave of absence for one month.

Kennedy, J. M., surgeon, granted leave of absence for one month.

Smith, L. L., asst.-surgeon, granted leave of absence for seven days.

Howell, Park, asst.-surgeon ordered to the Military Prison, Fort Leavenworth, Kans., for duty.

Craig, C. F., asst.-surgeon, ordered to Fort Leavenworth, Kans., for duty.

Wickline, W. A., asst.-surgeon, ordered to the Army General Hospital, Presidio of San Francisco, Cal., for duty.

Brown, H. L., asst.-surgeon, ordered to Fort Riley, Kans., for duty.

Humphreys, H. G., asst.-surgeon, ordered to Camp Captain John Smith, Jamestown Exposition, for temporary duty.

Daywalt, contract surgeon, ordered from Fort DeSoto, Florida, to Fort Oglethorpe, Ga., for temporary duty.

McCown, T. B., contract surgeon, left Fort Mott, N. J., on leave of absence for three months.

Hammond, W. G., dental surgeon, left Fort Huachuca, Ariz., for duty at Fort Apache, Ariz.

Marshall, J. S., examining and supervising dental surgeon, left Camp Yosemite, Cal., for duty at his proper station, Army General Hospital, Presidio of San Francisco, Cal.

Sorber, O. M., dental surgeon, ordered from Fort Snelling, Minn., to his home, Pittsburg, Pa., for annulment of contract.

Priest, Howard, contract surgeon, ordered from Philadelphia, Pa., to the Army General Hospital, Fort Bayard, N. M., for duty.

Peck, L. B., contract surgeon, granted leave of absence for two months.

Navy Changes.

Changes in the Medical Corps U. S. Navy, for the week ended Oct. 5, 1907:

Wheeler, L. H., asst.-surgeon, detached from the *Raleigh* when placed out of commission and ordered home to wait orders.

Wickes, G. L., asst.-surgeon, detached from the *Cincinnati*, when placed out of commission, and ordered home to wait orders.

Dorsey, B. H., P. A. surgeon, ordered to the *Washington*.

Johnson, M. K., surgeon, detached from the Naval Training Station, Charleston, S. C., and ordered to the Naval Training Station, Newport, R. I.

Dunn, H. A., P. A. surgeon, ordered to additional duty with Naval Recruiting Party No. 2.

Cole, H. W., asst.-surgeon, orders to the Naval Training Station, Newport, R. I., revoked; detached from the *Alabama* and ordered to the Naval Training Staton, Charleston, S. C., October 6.

Clifford, A. B., asst.-surgeon, ordered to duty at the Naval Medical School Hospital, Washington, D. C.

Jones, E. L., asst.-surgeon, detached from the *Milwaukee* and ordered to the *Maryland*.

The following officers have been ordered to the Naval Medical School, Washington, D. C., for course of instruction; Asst.-Surgeons A. B. Heyward, G. D. Hale, and J. T. Miller.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and noncommissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Oct. 2, 1907:

Bahrenburg, L. P. H., P. A. surgeon, granted leave of absence for seven days from Oct. 4, 1907.

Long, J. D., P. A. surgeon, relieved from duty at San Francisco and directed to report to P. A. Surgeon Rupert Blue for special temporary duty.

Creel, R. H., P. A. surgeon, leave of absence granted in February, 1907, revoked.

Brooks, S. P., acting asst.-surgeon, granted leave of absence for 30 days from Sept. 25, 1907.

Curley, C. P., acting asst.-surgeon, granted leave of absence for 8 days, Sept. 30, 1907.

Dunn, J., acting asst.-surgeon, granted leave of absence for 30 days from Oct. 8, 1907.

Hume, Lea, acting asst.-surgeon, granted extension leave of absence of 9 days from Sept. 30, 1907.

Marsh, W. H., acting asst.-surgeon, granted leave of absence for 10 days from Oct. 11, 1907.

Tuttle, Jay, acting asst.-surgeon, leave of absence granted for 15 days from Sept. 16, 1907, amended to be effective Oct. 3, 1907.

Thornton, M. J., acting asst.-surgeon, granted 3 days' leave of absence on account of sickness from Sept. 20, 1907, to Sept. 27, 1907.

Thornton, M. J., acting asst.-surgeon, granted leave of absence for 30 days from Oct. 5, 1907.

Weldon, W. A., acting ast.-surgeon, leave of absence granted for one month from Sept. 10, 1907, revoked.

BOARDS CONVENED.

Under date of Sept. 28, 1907, boards of medical officers were convened as follows, for the purpose of conducting medical examinations of candidates for appointment as cadet-engineer in the Revenue Cutter Service, the examinations to be held Oct. 1, 1907:

At Newport News, Va.: Asst.-Surgeon G. L. Collins, chairman; Acting Asst.-Surgeon A. C. Jones, recorder.

At Boston, Mass.: Surgeon R. M. Woodward, chairman; Asst.-Surgeon, T. W. Salmon, recorder.

At Philadelphia, Pa.: Surgeon G. M. Gassaway, chairman; P. A. Surgeon T. Clark, recorder.

A board of medical officers was convened to meet at Baltimore, Md., Sept. 30, 1907, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Surgeon L. L. Williams, chairman; P. A. Surgeon J. T. Burkhalter, recorder.

A board of medical officers was convened to meet at Chicago, Ill., Oct. 2, 1907, for the physical examination of candidates for appointment as cadets in the Revenue Cutter Service. Detail for the Board; Surgeon G. B. Young, chairman; Surgeon B. S. Warren, recorder.

A board of medical officers was convened to meet at Cleveland, Ohio, Oct. 4, 1907, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: P. A. Surgeon H. S. Mathewson, chairman; Acting asst.-Surgeon W. A. Baird, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague, have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended October 4, 1907:

SMALLPOX—UNITED STATES.

California: San Francisco, Sept. 8-14, 1 case.
Illinois: Chicago, Sept. 15-21, 1 case.
Kentucky: Louisville, Sept. 20-26, 1 case.
Louisiana: New Orleans, Sept. 15-21, 1 case.
Massachusetts: Boston, Sept. 22-28, 1 case, imported.
Michigan: Saginaw, Sept. 15-21, 1 case.
Ohio: Dayton, Sept. 15-21, 1 case.
Nebraska: Lincoln, Aug. 1-31, 3 cases.
New Jersey: Carlstadt, Sept. 6, 1 case.
Texas: San Antonio, Sept. 8-14, 1 case.
Washington: Seattle, Aug. 1-31, 18 cases.
Wisconsin: Milwaukee, Sept. 18-24, 2 cases.

SMALLPOX—FOREIGN.

Africa: Algeria, Aug. 1-31, 6 cases; Cape Town, Aug. 11-17, 1 case.
Argentine Republic: Rosario, July 1-31, 6 deaths.
Brazil: Manaos, Aug. 24-31, 1 death; Rio de Janeiro, Aug. 12-24, 16 cases, 2 deaths; Para, Sept. 1-14, 39 cases, 23 deaths.
Canada: Halifax, Sept. 15-21, 2 cases.
Chile: Iquique, Aug. 31, present.
China: Cheefoo, Aug. 11-17, 1 case; Hong Kong, July 8-Aug. 24, 9 cases, 5 deaths.
France: Marseilles, Aug. 1-31, 35 deaths; Paris, Sept. 1-7, 4 cases.
India: Calcutta, Aug. 11-17, 2 deaths; Madras, Aug. 1-27, 2 deaths.
Java: Batavia, Aug. 11-17, 3 cases.
Madeira: Funchal, Sept. 2-6, 4 cases, 1 death.
Malta: Valetta, Sept. 1-7, 2 cases, 1 death.
Mexico: Aguas Calientes, Sept. 8-14, 2 deaths; Mexico City, Aug. 18-24, 2 deaths.
Portugal: Lisbon, Sept. 11-17, 3 cases.
Russia: Riga, Sept. 1-7, 1 case; St. Petersburg, Aug. 18-31, 4 cases, 1 death.
Spain: Barcelona, Sept. 1-10, 2 deaths; Cadiz, Aug. 1-31, 5 deaths; Denia, Sept. 1-7, 2 cases; Seville, Aug. 1-31, 3 deaths; Valencia, Sept. 2-8, 15 cases, 1 death.
Panama: Coln, Sept. 9, 1 cases on S. S. *Atrate* from Vigo, Spain.
Turkey in Europe: Constantinople, Sept. 2-8, 1 death.
Turkey in Asia: Bassorah, Aug. 11-24, present.

CHOLERA.

Africa: Algeria, Aug. 1-31, 2 deaths (quarantined without the city limits).
China: Tientsin, Aug. 15-17, 3 cases, 2 deaths (from steamship from Shanghai).
India: Bombay, Aug. 21-27, 52 deaths; Calcutta, Aug. 11-17, 27 deaths; Madras, Aug. 17-23, 7 deaths; Rangoon, Aug. 11-17, 1 death.
Japan: Kobe, Aug. 24-Sept. 7, 7 cases, 2 deaths; Moji, Aug. 19-Sept. 4, 360 cases, 114 deaths; Nagatsu, Aug. 31, 14 cases daily; Nara, Sept. 1, 1 case; Osaka, Sept. 14, present; Sasaho, Sept. 1,

present; Yokahama, Sept. 1-2, 1 case, 1 death; from S. S. *Takasago Maru.*

Philippine Islands: Manila, Aug. 4-10, 3 cases, 2 deaths.

Russia: Astrachan, July 14-Sept. 4, 1,231 cases, 574 deaths; Iaroslaw, July 14-Aug. 20, 2 cases, 2 deaths; Jurino, Aug. 26, 2 cases; Moskow, Aug. 31, 1 case (imported from Saratov); Nizhni-Novgorod, Aug. 26-Sept. 3, 60 cases, 26 deaths; Perm, Aug. 24-29, 6 cases; St. Petersburg, Aug. 18-21, 12 cases, 7 deaths; Samara, Government District, July 16-Sept. 3, 344 cases, 237 deaths; Saratov, July 16-Sept. 3, 147 cases, 60 deaths; Simbirsk, July 7-Aug. 5, 7 cases, 3 deaths; Stavropol, Sept. 1, still present; Sept. 1, present at Balochna, Busulusk, Kastroma District, Nikolajwesk, Novouzensk, Sysran and Zariszn.

YELLOW FEVER.

Brazil: Manaos, Aug. 24-31, 1 death; Para, Sept. 1-14, 6 cases, 1 death; Rio de Janeiro, Aug. 12-25, 2 cases.

Costa Rica: San Mateo, to Aug. 31, 1 case, 1 death.

Cuba: Alacranes, Oct. 1, 1 death; Cienfuegos, Sept. 25-Oct. 2, 8 cases, 1 death, total from Aug. 3, to Oct. 2, 62 cases, 16 deaths; Havana, Oct. 1, 1 case (case reported Sept. 19 proved not to be yellow fever); Jovellanos, Sept. 24, 1 case, 1 death; Palos, Oct. 1, 1 death.

Union del Reyes, Sept. 29, 1 case, 1 death.

Trinidad, Port of Spain: Aug. 18-24, 1 case, 1 death.

PLAGUE—UNITED STATES.

California: San Francisco, Sept. 23-30, 6 cases, 1 death; total from Aug. 12-Sept. 30, including Berkeley, 49 cases, 27 deaths.

PLAGUE—FOREIGN.

Algeria: Oran, Sept. 30, present.

Brazil: Rio de Janeiro, Aug. 12-18, 2 cases.

China: Hong Kong, Aug. 16-Sept. 5, 35 cases, 34 deaths.

Egypt: Alexandria, Aug. 14-Sept. 4, 26 cases, 16 deaths; Port Said, Aug. 11-18, 4 cases, 4 deaths; Behera Province, Aug. 14-20, 1 case.

Formosa: Aug. 4-24, 11 cases, 14 deaths.

India: General, Aug. 11-17, 3,479 cases, 2,545 deaths; Bombay, Aug. 21-27, 14 deaths; Calcutta, Aug. 11-17, 4 deaths; Rangoon, Aug. 11-17, 30 deaths.

Japan: Osaka, Sept. 6, present.

Peru: Callao, Aug. 25-31, 1 death; Huanchaco, Aug. 25-31, 31 cases, and vicinity; Lima, Aug. 31, still present; Piura, Aug. 25-31, 1 case, 1 death; Viru, Aug. 21-31, 9 cases, 7 deaths.

Manchuria: Kaiping, province of Kwantung, Aug. 31, 1 case.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

GEORGIA Board of Eclectic Medical Examiners, Senate Chamber, Atlanta, about October 15. Secretary, Dr. C. H. Field, Marietta.

NEW JERSEY State Board of Medical Examiners, State House, Trenton, October 15-16. Secretary, Dr. J. W. Bennett, Long Branch.

LOUISIANA State Board of Medical Examiners, Tulane University Medical Department, October 15-16. Secretary, Dr. F. A. LaRue, 211 Camp St., New Orleans.

TEXAS State Medical Examining Board, Fort Worth, October 21. Secretary, Dr. G. B. Foscue, Waco.

INDIANA Board of Medical Registration and Examination, Indianapolis, October 22-24. Secretary, Dr. W. T. Gott, Crawfordsville.

ILLINOIS State Board of Health, Great Northern Hotel, Chicago, October 23-25. Secretary, Dr. J. A. Egan, Springfield.

NEVADA State Board of Medical Examiners, Carson City, November 4. Secretary, Dr. S. L. Lee, Carson City.

LOUISIANA Homeopathic Board of Medical Examiners, New Orleans, November 4. Secretary, Dr. Gayle Aiken, 1102 St. Charles Ave., New Orleans.

MAINE State Board of Registration of Medicine, City Building, Portland, November 12. Secretary, Dr. Wm. J. Maybury, Saco.

CONNECTICUT Homeopathic Medical Examining Board, New Haven, November 12. Secretary, Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

CONNECTICUT Eclectic Medical Examining Board, New Haven, November 12. Secretary, Dr. T. S. Hodge, Torrington.

CONNECTICUT (Regular) Medical Examining Board, City Hall, New Haven, November 12-13. Secretary, Dr. Charles A. Tuttle, New Haven.

MASSACHUSETTS Board of Registration in Medicine, Room 15, State House, Boston, November 12-14. Secretary, Dr. Edwin B. Harvey, State House, Boston.

WEST VIRGINIA State Board of Health, Waldo Hotel, Clarksburg, November 12-14. Secretary, Dr. H. A. Barbee, Point Pleasant.

MISSOURI State Board of Health, Southern Hotel, St. Louis, November 19-21. Secretary, Dr. J. A. B. Adcock, Warrensburg.

FLORIDA (Regular) Board of Medical Examiners, Jacksonville, November 20-21. Secretary, Dr. J. D. Fernandez, Jacksonville.

Missouri April Report.—Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the written examinations held at St. Louis and Kansas City, April 16-18, 1907. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 234, of whom 159 passed, including 19 undergraduates, and 75 failed, including 16 undegraduates. The following colleges were represented:

College.	PASSED.	Year Grad.	Per Cent.
College of P. and S., Chicago	(1906) 76;	(1907)	75
Rush Med. Coll.	(1900) 78, 80; (1903) 82;	(1907)	81
National Med. University		(1905)	75
Hahnemann Med. Coll., Chicago		(1886)	75
Drake University		(1907)	82
University of Kansas		(1907) 75, 77,	79
University of Louisville		(1907)	76
Hospital Coll. of Med., Louisville		(1907)	75
Ensworth Central Med. Coll.		(1907) 75, 75, 77, 80,	82
St. Louis University	(1906) 75, 75, 76;	(1907) 75, 75, 75, 75, 75, 75, 76, 76, 76, 76, 77, 78, 79, 79, 79, 79, 80, 81, 82, 83,	85
St. Louis Coll. of P. and S.	(1906) 75;	(1907) 75, 75, 75,	76
Homeopathic Med. Coll. of Missouri		(1907) 75, 75,	76
Kansas City Hahnemann Med. Coll.		(1907)	78
Eclectic Med. University, Kansas City		(1907)	76
University of Missouri		(1907)	84
American Med. Coll., St. Louis		(1907) 75,	76

University Med. Coll., Kansas City (1907), the grade of 75 was reached by sixteen; 76 by one; 77 and 78 by two each, 79 and 80 by one each, and 81 and 82 by two each.

Washington University, St. Louis (1906) 75; (1907) the grade of 75 was reached by ten; 76 by two, 77 by three, 78 by four, 79 by three, 80 and 82 by two each, 83 and 85 by one each.

Barnes Med. Coll., St. Louis, (1898) 79; (1906) 75; (1907) the grade of 75 was reached by nine; 76 by three; 77 by five and 78, 79 and 82 by one each.

Eclectic Med. Institute, Cincinnati		(1896)	81
Jefferson Med. Coll.	(1898) 79;	(1906)	75
Meharry Med. Coll.		(1905)	75
University of Naples		(1882)	76
University of London, England		(1900)	75

FAILED.

Bennett Coll. of Ecl. Med. and Surg.	(1906)	63
National Med. University, Chicago	(1906)	59
College of P. and S., Keokuk	(1886)	55
Kentucky School of Med.	(1907)	58
Barnes Med. Coll., (1905) 53, 72; (1906) 65; (1907) 55, 57, 59, 62, 66, 67, 68, 69.		
St. Louis Coll. of P. and S., (1902) 68; (1906) 60, 61; (1907) 63, 66, 66, 68, 68, 69, 70.		
St. Louis University	(1906) 62, 63, 64, 66; (1907)	50
American Med. Coll., St. Louis	(1901) 37; (1905) 64; (1906) 46; (1907) 66, 68, 69.	
Washington University, St. Louis	(1906) 67; (1907)	69
Homeopathic Med. Coll., of Missouri	(1907)	68
Central Med. Coll., St. Joseph*	(1905)	68
Ensworth-Central Med. Coll., St. Joseph	(1906)	49
University Med. Coll., Kansas City, (1907) 59, 62, 64, 65, 68, 69, 70, 70, 71.		
Memphis Hospital Med. Coll.	(1904) 51; (1906)	69
Gate City Med. Coll.	(1906)	59
Meharry Med. Coll.	(1906)	66
University Coll. of Med., Richmond	(1895)	62
University of Athens, Greece	(1897)	55
Camerino University, Italy	(1892)	46
University of Naples, Italy	(1850)	50

* In 1905 this college merged with Ensworth Medical College to form Ensworth Central Medical College.

Illinois July Report.—Dr. J. A. Egan, Secretary of the Illinois State Board of Health, reports the written examination held at Chicago, July 25-27, 1907. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 63, of whom 50 passed and 10 failed. Three candidates took an incomplete examination. The following colleges were represented:

College.	PASSED.	Year Grad.	Total Exam'd.
Rush Med. Coll.	(1, 1897), (1, 1906), (5, 1907)		7
College of Med. and Surg., Chicago		(1907)	1
College of P. and S., Chicago		(1907)	12
Dearborn Med. Coll.		(1907)	1
Hahnemann Med. Coll., Chicago		(1906)	1
Jenner Med. Coll.		(1907)	3
National Med. University		(1907)	3
Northwestern Univ. Med. School		(1907)	3
Physio-Med. Coll. of Indiana		(1907)	1
University of Louisville	(1, 1905) (2, 1907)		3
Kentucky School of Med.		(1907)	1
Harvard Med. School		(1907)	1
Medical School of Maine		(1897)	1
St. Louis College of P. and S.		(1907)	1
St. Louis University		(1907)	1
Washington University, St. Louis		(1905)	1
Univ. and Bellevue Hosp. Med. Coll.,	(1, 1904), (1, 1905)		2
Eclectic Med. Institute, Cincinnati		(1907)	2
University of Pennsylvania		(1907)	1
Medico-Chirurgical College, Philadelphia		(1907)	1
University of Vermont	(1, 1884), (1, 1895)		2
McGill University, Quebec		(1905)	1

FAILED.

College of Med. and Surg., Chicago	(1907)	1
College of P. and S., Chicago	(1907)	1
Hering Med. Coll.	(1907)	1
Jenner Med. Coll.	(1907)	2
National Med. University	(1907)	1
University of Louisville	(1907)	1
Barnes Med. Coll., St. Louis	(1, 1903), (1, 1907)	2
Long Island Coll. Hosp.	(1887)	1

Oregon July Report.—Dr. Byron E. Miller, secretary of the Board of Medical Examiners of the State of Oregon, reports

the written examination held at Portland, July 9-11, 1907. The total number of subjects examined in was 15; percentage required to pass, 75. The total number of candidates examined was 33, of whom 14 passed and 19 failed, including 2 undergraduates. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
Northwestern Univ. Med. School....(1906) 92;	(1907)	82.4, 83
University of Iowa	(1907)	76.8
Southern Homeo. Med. Coll., Baltimore	(1897)	75.2
University of Michigan, Homeo. Dept	(1900)	84.2, 87.5
Detroit Coll. of Med.	(1896)	75.8
University of Minnesota	(1901)	78
Cornell University	(1907)	85.4
Medical Coll. of Ohio	(1892)	75.2
Cleveland Homeo. Med. Coll.	(1905)	77.8
University of Oregon	(1907)	76.6
University of Nashville	(1902)	79.2
FAILED.		
California Med. Coll.	(1896)	71
College of P. and S., Chicago.....(1904) 61.7;	(1906)	70.1
University of Iowa	(1907)	72
College of P. and S., Keokuk	(1878)	55.3
College of P. and S., Indianapolis	(1904)	59
Louisville Med. Coll. .....(1904) 67;	(1907)	71
Baltimore Med. Coll.	(1907)	64.9
Detroit Coll. of Med.	(1906)	62
Marion-Sims Coll. of Med.	(1896)	52
College of P. and S., Kansas City	(1901)	69.2
Barnes Med. Coll.	(1903)	71.8
University of Oregon	(1907)	69, 73.8
Willamette University	(1907)	65, 69.8

Medical Department, University of South Dakota.—The University of South Dakota has established a college of medicine, which, beginning this fall, will teach the branches of the first two years of the medical course. It is to be regretted that no medical men are included on the faculty, although the chairs in anatomy, physiology, pathology and bacteriology are still to be filled. A combination course is offered wherein the two years in medicine may be elected as the last two years for the B. A. degree. The minimum requirement for admission for the session of 1907-8 will be a four-year high school education. For the session of 1908-9, the requirement will be enlarged to include one year's work in a college of arts or sciences, and for the session of 1909-10 two years' of such college work will be required.

Post-Graduate Course for County Societies

DR. JOHN H. BLACKBURN, DIRECTOR,
BOWLING GREEN, KENTUCKY.

[The Director will be glad to furnish further information and literature to any County Society desiring to take up the course.]

FIRST MONTH.

THIRD WEEKLY MEETING.

Angioma.

Structure.

Simple Nevus: Varieties, structure of each, distribution.

Cavernous Nevus: Structure, distribution, prognosis.

Plexiform Angioma: Structure, distribution.

Lymphangioma.

Structure.

Lymphatic Nevus: Microscopic changes, distribution.

Cavernous Lymphangioma: Structure.

Lymphatic Cysts: Structure, occurrence, distribution, prognosis.

Sarcoma.

Structure, Varieties.

Round-Celled Sarcoma: Microscopic section, distribution, age, prognosis.

Lymphosarcoma: Microscopic section, distribution, age, prognosis.

Spindle-Celled Sarcoma: Microscopic section, distribution, prognosis.

Alveolar Sarcoma: Microscopic section, origin, distribution.

Melanosarcoma: Microscopic section, pigment, origin, distribution, prognosis.

General Characters of Sarcoma: Vascular supply, metastasis, capsule, infiltration, lymphatic supply, secondary changes, distribution.

Carcinoma.

Origin, Microscopic Structure, Varieties.

Glandular Cancer: Distribution, gross and microscopic appearances, lymph- and blood-vessels, secondary changes, differentiate from adenoma.

Squamous-Celled Cancer: Distribution, gross and microscopic appearances, characteristic margin, infiltration, secondary changes.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

Good Advice from a Wisconsin Councilor.

Dr. E. L. Boothby, Hammond, Wis., chairman of the Council of the Wisconsin State Medical Society, has issued a circular letter to the councilors of the state society which contains many valuable suggestions, some of which might well be brought to the attention of all of our councilors and organization officers. Dr. Boothby says:

Visit each one of your county societies at least once a year. The county secretary is by far the most important officer in many societies. Get the best secretary possible in each case. No society is doing its best work with an inefficient secretary, and the councilor would be justified in asking for the resignation of such a one and seeing to it that an efficient successor was installed.

Do not forget to attend to the organization and work of your district society. It should meet at least once a year and should be largely a public health meeting, devoted to the education of the people along the lines of preventive medicine. The public is becoming greatly interested in these questions and its assistance should be sought. Urge the members of your county societies to invite the lawyers, the clergy, boards of health, school boards, town, village and city officials to attend certain society meetings where questions of public importance, such as sewage and ventilation, are to be discussed.

The prime object of the county society is, or should be, to make a postgraduate school for every member. The district society should be made a school of instruction for the public on "How to Live." The state society is merely a joint meeting of county societies in which the year's work is reviewed and plans made for the future. Experience has proved that regular meetings at definite dates are absolutely necessary to the success of county societies. No society can do justice to itself with less than four meetings a year, and in cities a monthly or semi-monthly meeting will yield good results. A carefully prepared program is the key to a good meeting. A medical meeting without one is an insult to the intelligent and progressive member. Notify all members that the state and county dues are payable in advance. A little effort along this line will result in fewer delinquents.

Public Approval of Postgraduate Course.

The impression produced on the public by the move on the part of county societies for the establishment of postgraduate courses is well shown in an editorial which recently appeared in the Fairmont *West Virginian*. The editorial is headed "A Commendable Move," and is quoted herewith in full.

It is very gratifying to the public to learn that a majority of the doctors of Marion County attended the lecture of Dr. McCormack Saturday afternoon and to know that those present entered into the spirit of the meeting and were in accord with the teachings set forth and ready to support the principles by which they could become better servants of the public and stronger men in their profession. Fairmont should have, and will have, the strongest medical center in the state. We have the men who are capable of making it so, and they have the inclination. It was a pleasure to see how eager they were to take up the postgraduate or University Extension course as planned by the American Medical Association, so that doctors in any part of the United States, no matter in what hamlet they are located, may have the opportunity of knowing the scientific treatment of diseases as taught in the leading medical universities of America and Europe. This course will be a benefit to every physician in the county, and we feel proud that Marion County has so many doctors who are willing to take up this work which is intended to make them stronger men in their profession.

State Aid for Victims of Rabies.

In a recent issue of *The Post*, a little journal printed in Morgan Park, Ill., appeared a communication regarding the working of the new law regarding hydrophobia passed by the Illinois legislature at its last session. The editor, in commenting on the death of a young man of Danville who had been bitten by a mad dog and who had been sent to Chicago for treatment by means of funds raised by popular subscription, calls attention to the existence of the state law providing for the treatment of all victims of rabies in the state. The editor also calls attention to the fact that while the need of such a law is manifest, yet it has only been adopted in three states, namely, Illinois, New York, and Ohio. Inasmuch as it is not generally known that legislation along this line has taken place, we summarize herewith the laws of each of the states mentioned.

The Illinois law became effective on May 12, 1905, and provides that overseers of the poor or other officers having charge of public charities throughout the state may send to an institution within the state for the treatment of hydrophobia, all poor persons duly certified to by regular physicians as having been bitten by rabid animals or otherwise put in danger of infection with rabies. The law further provides that the transportation of such persons, together with attendants, shall be a charge on the counties in which they reside, and that the charges for treatment by the institution shall be paid by the state of Illinois at a rate not exceeding $100 per patient.

The New York law was adopted in 1895 and provides that overseers of the poor in the various counties may send to the Pasteur Institute of the State of New York all persons duly certified by authorized physicians to have been bitten by rabid animals or otherwise put in danger of infection. The provisions of the bill are practically the same as those of the Illinois law, which, however, it antedated by ten years.

The Ohio law makes similar provisions, except that the expense of treatment is borne by the counties instead of the state, and the cost in such cases is paid out of the fund created by the tax on dogs.

In view of the interest on this subject, and especially of the resolutions adopted by the House of Delegates at the Atlantic City session, the synopsis given above will doubtless be of interest. It is to be hoped that other state legislatures will take up this matter and provide for these unfortunates. Doubtless in most states a resolution or recommendation from the state association would be all that is necessary to call the attention of the state legislature to the necessity for such enactments.

Public Meetings.

The *Journal of the Missouri State Medical Association* editorially refers to the increasing frequency of public meetings of county societies. Some counties in the state are devoting one meeting each year to this purpose, inviting the general public, especially the influential portion, to be present and to participate in the discussion of topics of general sanitary interest. As the *Journal* very truly says, "while we are educating the people along lines that will enable them to guard against disease and infection, we can also sow some seed that will bear good fruit when we go before the lawmaking bodies and ask for certain measures to advance the interests of the commonwealth."

This is correct; legislation, unless backed by public opinion, is useless. By enlightening and educating the public it will be possible to secure, and to have enforced, legislation that otherwise would be impossible. The best way to enlighten the public is by such public society meetings as are now becoming more and more general. One point should be kept in mind, however; it should be the public's meeting, and the public should be invited to participate in the papers and discussions.

The report of Dr. T. W. Moore, secretary of the West Virginia State Medical Association, presented to the house of delegates at the last session of that body, shows that the membership of the state association increased over 30 per cent. He attributes much of this growth to the establishment by the state society of the *West Virginia Medical Journal*.

Dr. W. S. Link, councilor for the Fourth District, West Virginia State Medical Association, reports the organization of the Tyler County Medical Society at Sistersville, W. Va., September 12, following an address by Dr. McCormack. The officers elected were: Dr. G. E. West, Sistersville, president; Dr. G. W. Schriver, Middlesbourne, vice-president; Dr. V. H. Dye, Sistersville, secretary and treasurer.

Society Proceedings

COMING MEETINGS.

Kentucky State Medical Association, Louisville, Oct. 15-17.
Assn. of Military Surgeons of the U. S., Norfolk, Va., Oct. 15-18.
American Association of Railway Surgeons, Chicago, Oct. 16-18.
Medical Society of Virginia, Chase City, Nov. 12-15.
Southern Surgical and Gyn. Assn., New Orleans, Dec. 17-19.

COLORADO STATE MEDICAL SOCIETY.

Annual Meeting, held in Glenwood, Sept. 17-19, 1907.

The President, DR. HERMAN R. BULL, Grand Junction, in the Chair.

Special Address.

A special event of the meeting was an address by Dr. Charles H. Mayo, Rochester, Minn., on "The Nature and Treatment of Exophthalmic Goiter."

Delegates from Utah.

A large number of members of the Utah State Medical Society were present at the meeting.

Entertainment.

After the business session on September 18, the visitors were taken to Shoshone, in the Grand Canyon by a special train over the Denver and Rio Grande Railroad and spent the afternoon in a trip to Hanging Lake and in the inspection of the work of the power project of the Central Colorado Power Company. They were entertained at luncheon at the power company's camp. In the evening the visitors were given a dance in the ballroom of the Hotel Colorado.

Rush Alumni.

The Alumni of Rush Medical College who were present held a special meeting September 18 and dined together.

Officers Elected.

The following officers were elected for the ensuing year: President, Dr. Herbert B. Whitney, Denver; vice-presidents, Drs. William P. Harlow, Boulder; Will H. Swan, Colorado Springs, and William W. Crook, Glenwood Springs; secretary, Dr. Melville Black, Denver (re-elected), and treasurer, Dr. George W. Miel, Denver.

WASHINGTON STATE MEDICAL ASSOCIATION.

Eighteenth Annual Meeting, held at Seattle, Sept. 10-12, 1907.

The President, DR. JAMES H. LYONS, Seattle, in the Chair.

Address of Welcome.

At the opening session the address of welcome was made by the president, Dr. James H. Lyons, in the absence of the mayor.

President's Address.

In his annual address the president, Dr. James H. Lyons, Seattle, discussed the question of race suicide and criminal surgery, and stated that there is urgent need of a well-settled course of action in cases of interference in pregnancy, and that this course of action should not be founded on the immature theories of any individual, but on the underlying principles of ethics involved in the case. Woman need not marry, but she is a free moral agent and once she makes a choice, she voluntarily thereby assumes all the risks and dangers, and she must be ready to make any sacrifice necessary on the altar

of woman's duty. When she is shown her duty she is not afraid to meet any necessary risk nor to make any necessary sacrifice.

Criminal Surgery.

DR. MONTGOMERY RUSSELL, Seattle, defined criminal surgery and explained what constitutes criminal surgery in statutory laws in the different states. He gave a historical sketch of its prevalence in different countries of the world, and considered it as prominent among the great vices of the day; described the brutal and septic methods usually employed; set forth the risks and dangers attendant on the crime; considered the daily press responsible in a great measure for the increase in the crime; gave a summary of the laws for the punishment of the crime in different countries, and stated that he considers the punishment for the crime ineffectual.

Protection of the Unborn.

DR. CONRAD N. SUTTNER, Walla Walla, gave the moral and legal status of the unborn; described the teachings of the theologians, lawyers and honest physicians and the bearing of the moral and physical health of the parents on the unborn. He then took up the question of the frustration of Nature's laws by criminal practitioners, press advertisements, quack gynecologists, radical and ignorant pelvic surgery, and patent medicines. He discussed the mental and physical influence of this rampant criminality on posterity, gave statistics, and in closing asked what honest physicians could do to prevent this state of affairs.

Secretary Taft's Address.

The Honorable WILLIAM H. TAFT, Secretary of War, gave an address September 12, in which he spoke of the knowledge regarding tropical diseases obtained by the Spanish-American War, and in discussing bubonic plague, spoke of rats as a most important factor in its causation.

Better Knowledge of Therapeutics.

DR. LEMON R. MARKLEY, Bellingham, in a paper entitled "A Plea for a Better Knowledge of Materia Medica and Therapeutics," strongly urged the importance of a thorough knowledge of the two subjects and deplored the lack of training of recent medical graduates as regards these important branches. He stated that the colleges are in a measure responsible, as they fail to impart proper instruction in these departments.

Sanitation and the Physicians.

DR. THOMAS J. SULLIVAN, Butte, Mont., claimed that the sanitary knowledge of to-day is far ahead of practical sanitation, because the medical profession, whose duty it is to enforce the law, leaves this duty to lay politicians. While the indifference of the public places the entire responsibility in this matter on the medical profession, to the physicians and to the daily press must be credited every safeguard thrown around public health. He claimed that there should be a law placing the organization and appointment of state boards of health in the hands of the state medical associations, and that the control of the local health officers and inspectors should be placed in the hands of state boards, thus removing the entire organization from the sphere of partisan politics.

Antituberculosis Compaign.

At the business meeting it was decided to wage a systematic crusade against tuberculosis. Continuous and systematic work along the lines of education regarding sanitary rules was agreed on.

Entertainments.

The entertainment provided for the visitors included a smoker and concert, given by the Seattle Athletic Club; a reception given for the wives of the visiting physicians by the women physicians of the town, and a reception given by Dr. and Mrs. Hiram M. Reed.

Election of Officers.

The following officers were elected for the ensuing year: President, Dr. Conrad N. Suttner, Walla Walla; vice-presidents, Drs. William H. Axtell, Bellingham and Robert G. Black, Vancouver; secretary, Dr. Curtis H. Thomson, Seattle; treasurer, Dr. Leon L. Love, Tacoma; delegate to the American Medical Association, Dr. James R. Yocum, Tacoma, and alternate, Dr. John G. Cunningham, Spokane.

1908 Meeting.

It was decided to hold the next annual meeting of the society in September, 1908, at Walla Walla. It was also decided to extend an invitation to the state societies of Idaho, Oregon, Montana, California and British Columbia, to meet in Seattle in 1909.

INTERNATIONAL DERMATOLOGICAL CONGRESS.

Sixth Meeting, held in New York City, Sept. 9-14, 1907.

(*Continued from page 1216.*)

The Effect of Roentgen Rays on Paget's Disease of the Breast.

DR. TERZAGLII and PROF. R. CAMPANA, Rome, Italy, said that some forms of apparent psoriatic eczema on the breast nipple often do not receive medical attention, and not seldom assume a chronic and malignant form, as of epithelial tumor, a form that has been named from the author first describing it, "Paget's disease." They spoke of the results obtained with Roentgen rays in cases that threatened to assume the above-named form of disease. The clinical history was then given of a case of eczema psoriasiform of the breast (incipient Paget's disease).

Roentgen-Ray Baths and Dermametropathism.

DR. HERMAN LAWRENCE, Melbourne, Australia, said that an *x*-ray bath is one in which the *x*-ray is applied to the skin of the whole body at one time. There are six tubes, connected to six separate coils, and each coil has its own break and its own primary current supply. The patient stands with the tubes, three on either side, at a distance of twelve inches from each tube. The patient is wrapped in a white sheet. Lead foil is used to protect the head and the genitals. He has used the bath successfully in mycosis fungoides, generalized eczema, psoriasis, obstinate urticaria, pruritus and in children when lichen urticatus is very troublesome. Dermametropathism is a word he has coined and is meant to express a system of measuring a disease of the skin. It is based on the result produced on the skin by pressure with a smooth instrument, such as a penhandle. The same instrument must be used and the same amount of pressure applied, as the varying results obtainable in different diseases are compared the one with the other, or the result obtained on a diseased part of the skin as compared with that obtained on the skin which is not diseased.

THURSDAY AFTERNOON, SEPT. 12, 1907.

DR. JAMES NEVINS HYDE, Chicago, PROF. R. CAMPANA, Rome, Italy, and DR. SAMUEL SHERWELL, Brooklyn, Chairmen.

The Relation of the Navy to the Study of Tropical Diseases.

DR. P. M. RIXEY, Surgeon-General United States Navy, Washington, D. C., presented this paper, which was read by Dr. G. E. H. Harman, Medical Director United States Navy. Taking a period of ten years, he finds that diseases of the skin have practically caused twice as great damage to the health of the navy as was caused by all other diseases of a quarantinable nature. The actual proportion was 10 to 18. If he had included syphilitic affections of the skin, the disproportion would be greatly increased. When appointed Surgeon-General of the navy, in 1902, his first aim was to establish a school where the young officers of the medical corps would be grounded in the essentials of medical research. Rhinopharyngitis mutilans was studied by Daniels in the Fiji Islands and is very prevalent in Guam. During the summer of 1906 he detailed Surgeon Stitt, of the navy, to investigate the cause of this disease. The result of his investigation was of a negative nature. It is possible that, with some of the more recent methods of staining, better success may be had. In Samoa there should be a splendid field for renewal of the work in connection with filariasis, especially from a pathologic standpoint. Another puzzling affection is what is generally termed "climatic bubo." It is not related to any venereal disease. In consideration of the fact that the greater part of the time of their force is spent in tropical waters, the importance

of the treatment of simple skin affections for the navy can not be overestimated.

Tropical Diseases of the Skin.

DR. H. RADCLIFFE-CROCKER, London, presented tables, a glance at which shows that practically all exclusively tropical diseases of the skin are due to parasites of various kinds. Tropical ringworm is probably universal in all tropical countries. Scrapings of the skin and nails from ringworm from various parts of the globe, Manila, China, the Cape, Japan and India among others, under the microscope, show large spored trichophytons; but they differ considerably in their cultures. It is evident that, while the great majority of tinea tonsurans are due to trichophytons of various species, the other forms of fungi play some part in their production. Tokela ringworm appears to be confined to the southeastern portion of the globe. Erythrasma due to *Microsporon minutissimum* is very frequent in the tropics. In considering furunculosis orientalis, he states that morphologically the "Leishman body" of oriental sore is identical with that of kala-azar. So far as our present knowledge goes we have to regard these affections as localized forms of trypanosomiasis which is somewhat startling and must widen our conception considerably of trypanosomiasis. He raises the question whether yaws and syphilis are identical or only analogous diseases. The clinical fact that the manifestations of yaws yield to mercury and iodid of potassium no doubt lends color to the theory of identity, but it by no means proves it.

Some American Parasites of the Skin.

DR. CHARLES WARDELL STILES, Washington, D. C., of the United States Public Health and Marine-Hospital Service, spoke of the frequency of "ground itch" in the southern states in connection with "uncinariasis;" he gave demonstration of preparations showing the larval hookworms passing through the skin. He also presented and described specimens of a parasite new to the United States; this parasite occurs in the subcutaneous connective tissue of man in Florida and produces a swollen condition with spots or acne-like appearance. He also demonstrated the original specimen of *Agamofilaria georgiana*, a thread worm recently described as a parasite in the skin of man in Georgia.

The Clinical Grouping of Tropical Ulcers of the Philippines.

DR. E. R. STITT, Surgeon, United States Navy, made the statement that after observing in the natives many chronic ulcerations which clinically do not differ from ulcerations which might be expected from badly infected and neglected wounds or from the infective granuloma, and that from a standpoint of history there is the single, common note of long duration, the conclusion was arrived at that tropical ulcer, as described by the authorities, does not exist in the Philippines. Subsequently the same thing was observed in Guam in studying an ulcerating disease known as gangosa. Later on, among sailors at the Naval Hospital, Canacao, two distinct types of chronic ulcer were observed. Smears from ulcers of the first type showed scarcely any polymorphonuclears, only cells of lymphocyte characteristics. Smears from ulceration of the second type showed the presence in abundance of a single organism, morphologically a corynebacterium. Polymorphonuclears were found in greatest profusion, but no cocci.

Additional Notes on Gangosa.

DR. O. J. MINK and DR. N. T. MCLEAN, assistant surgeons, United States Navy, since the publication of their original paper on this subject (THE JOURNAL A. M. A., Oct. 13, 1906), state that additional literature, not available at Guam, has been studied and a few further facts regarding certain phases of the disease have been obtained. They present facts of their original paper, modified by the recent work and observations. Gangosa is a Spanish word, meaning muffled voice. The disease has existed in Guam for at least 150 years. The youngest age at invasion was 3 and 9 years; the oldest were 54 and 59 years. In the series of 80 cases, 49 occurred in females and 31 in males. The majority of the cases appeared in pure blood natives. The native theory and that held by the Spaniards gives food a prominent place in the causation. The disease has been considered a late manifestation of syphilis. Gangosa has also been described as a sequel of yaws. Their observations lead them to believe that there is a specific infecting agent, the nature of which is as yet undetermined. They saw no cases which would indicate that infection by inoculation occurs. As the disease is not fatal, autopsy is only possible when death results from intercurrent diseases. The majority of the patients present themselves for treatment only after mutilation is marked. The contagiousness of the disease has been recognized by the Spaniards for almost a century. The treatment is essentially local and should aim to destroy the infected area. Tincture of iodin applied freely appears to be the best agent for this purpose. Lunar caustic, phenol and chromic acid have been used. An antiseptic mouth wash should be employed.

Clinical Ulcers of the Philippines.

DR. GEORGE C. SHATTUCK, Boston, presented clinical notes and microscopic findings in thirty-four cases of chronic ulcerative processes occurring in patients who were all natives of the Philippines, with the exception of one, a Chinaman. Four different types of ulceration were studied. The first and second were not definitely diagnosed; they were probably infections *sui generis*. In the third type the weight of evidence is slightly in favor of syphilis. Many examples of this type were seen. In the fourth type the probability of syphilis is strong. The diagnoses were all made clinically because microscopic findings were all negative or ambiguous.

Filariasis.

A paper on "Filariasis" was read in German by DR. T. TANAKA, Tokio, Japan, and a demonstration of the uses of liquid air in dermatology was given by DR. CHARLES T. DADE, New York City.

FRIDAY MORNING, SEPT. 13, 1907.

Vice-presidents DR. ROBERT W. TAYLOR, New York, DR. HERMANN G. KLOTZ, New York, and PROFESSOR WOLF, Chairmen.

The Present Status of Our Knowledge of the Parasitology of Syphilis.

PROF. ERICH HOFFMANN, Berlin, Germany, presented a report on this with lantern slide demonstrations.

DR. OSCAR T. SCHULTZ, Cleveland, said that at the present time only *Cytorrhyctes lues* and *Spirochæta pallida* need be considered in a discussion of the parasitology of syphilis. The weight of evidence is against *Cytorrhyctes lues*, firstly, as to its being a protozoön and, secondly, as to its having anything to do with syphilis. The chief factors in favor of an etiologic relationship between *Spirochæta pallida* and syphilis may be briefly summarized as follows: 1. *Spirochæta pallida* has characteristics sufficiently marked to permit the experienced observer to distinguish between it and other spiral organisms. 2. The organism is present in all the various manifestations of the disease. 3. It is found only in syphilis; not in any other condition. 4. It bears a definite relationship to those histopathologic changes which one considers characteristic of syphilis. 5. After the use of mercury the amelioration of the cutaneous lesions and the disappearance of the spirochetes go fairly well hand in hand. 6. In the lesions of the experimental syphilis in lower animals *Spirochæta pallida* is present and has the same characteristics as in the human disease.

Because it has been thus far impossible to obtain and grow the organism in pure culture, Koch's laws are not susceptible of proof. However, the constant presence of the parasite in the lesions of syphilis, its presence only in syphilis and not in other diseases, its definite relationship to the pathologic changes, its morphologic characteristics, and its presence in the lesions of experimental syphilis in lower animals furnish sufficient evidence to establish the etiologic relationship of *Spirochæta pallida* to syphilis.

DISCUSSION.

DR. CHARLES WARDELL STILES, Washington, D. C., of the United States Public Health and Marine-Hospital Service, be-

lieves that if this organism (the pale spirochete) does not reproduce by longitudinal division the probabilities are in favor of the organism being a protozoön. With regard to the correct name for the parasite, he believes that they should be guided by the International Code on Nomenclature, and should call it triconima, and not *Spirochæta pallida*.

A paper on "Localisations systématisées du treponema Pallida" was presented by DRS. H. HALLOPEAU and GASTON, Paris, and read by DR. HALLOPEAU. DR. ALBERT DREYER, Cologne, read a paper, "Beiträge zur Spirochæten Frage."

A Contribution to Heredosyphilology.

DR. ROBERT W. TAYLOR, New York, gave the postulates which summarize the accepted canons of belief on this subject and said that the ideas in them are dangerously misleading and should no longer hold sway. He said that the following conclusions are warranted by up-to-date observations, studies and results: 1. The absence of very early manifestations in heredosyphilis is no criterion that the infant is not infected. 2. In many cases the early exanthematic manifestations may be wanting, but later on specific or dystrophic lesions may show themselves. 3. Treatment of the infected infant should always be promptly begun and persisted in sedulously. 4. Age and treatment tend to cure the child. 5. The view that inherited syphilis is at first superficial and later becomes deep and visceral is false, since the whole organism is involved from very early life. 6. Syphilis hereditaria tarda is not exceptional; it may occur at about the eighth and twelfth years, and even earlier, and frequently is encountered at all periods up to the thirtieth year of life, and perhaps later.

Syphilis and Massage.

DR. ROBERT W. TAYLOR, New York, reported in detail the case of syphilitic infection seemingly caused by the manipulations of the masseur. The patient had not had coitus for months, nor had he dallied with any woman. His habits were correct, and the only person who had access to his legs and arms was the masseur. This was a case of a healthy man having simple efflorescences over the legs and arms who was infected by a luetic masseur in the administration, his hands becoming soiled with the secretions of mucous patches. The teachings of the case are evident.

FRIDAY AFTERNOON, SEPT. 13, 1907.

Vice-presidnt, DR. ABNER POST, Boston, and PROFESSOR VEIEL, in the Chair.

Radiograms of Syphilis of the Long Bones.

DR. MARTIN W. WARE, New York, said that syphilitic affections of the bones have been made the last of the bone diseases to be subjected to *x*-ray examinations. While it can not be claimed that a pathognomonic picture may be obtained in every instance, yet a succession of these radiograms shows a uniformity in the type of the findings which corresponds in a striking manner with the picture of the gross pathologic appearances of syphilis of the bones. It is, therefore, justifiable to speak of "characteristic findings" in syphilis of the bones which, taken in connection with the data of the anamnesis, materially add to the certainty of the diagnosis. On the whole, the productive character of the syphilitic inflammation of the bones manifests itself in the dense shadows of the radiograms. Gummatous deposits which cause absorption are discernible by the lighter shadows, but most commonly surrounded by the denser shadows of areas of bone consolidation. His paper was illustrated by lantern slides.

Hutchinson Teeth; Their Variation and Their Value.

DR. ABNER POST, Boston, said that in order to appreciate the full value of these teeth one must know their life history and their relation to other symptoms. They are formed before birth. They are often associated with keratitis and deafness (Hutchinson's triad).

Peripheral Syphilitic Arteritis.

DR. HERMANN G. KLOTZ, New York, said that it is generally accepted that syphilis may cause pathologic processes in the arteries of the brain. It would seem obvious that arteries in other parts of the body must become similarly affected. A number of observations, showing arteritis of peripheral arteries due to syphilis, have been published, but generally not much attention has been paid to them. Quite a number of such cases have been classed as Raynaud's disease, and syphilis is usually mentioned as one of the causes of that disease. He called attention to the practical importance of distinguishing the cases of syphilitic arteritis from those of Raynaud's disease and of calling them by their proper name.

A paper on "L'héredo-syphilis quaternaire de tissue réticulé" was read by PROF. E. GAUCHER, Paris. PROFESSOR GAUCHER and DR. A. LEVY-BING, Paris, presented a paper on "Les ostéopathies de l'hérédo-syphilis quarternaire," which was read by DR. A. LEVY-BING. A paper on a "Semplice e rapido metodo di ricerca microchimica del mercurio nell 'orina" was read by DR. C. LOMBARDO, Modena, Italy.

SATURDAY MORNING, SEPT. 14, 1907.

DR. H. W. STELWAGON, Philadelphia, in the Chair.

Zoster Arsenicalis.

DR. JOSEPH ZEISLER, Chicago, said that a fair number of cases under personal observation long ago convinced him of the existence of true arsenical zoster. He submitted brief notes comprising eleven cases of arsenical zoster recorded in a period of twelve years. In all of them arsenic was the chief internal medication, and in all of them, after a variable period, and usually when the maximum dosage had been reached, appeared a clinically unmistakable zoster. In addition to these eleven cases, he has repeatedly seen, in patients treated for various disorders by arsenic, what might be termed an abortive zoster or so-called zosteroid eruption. After patients have once gone through an attack of arsenical zoster, they can safely continue with the use of arsenic without the risk of a second attack.

Proteid Metabolism and Its Relation to Dermatitis.

DR. JAMES C. JOHNSTON, New York City, and DR. HANS J. SCHWARTZ, New York City, said that the cases in which urinary examinations were made include urticaria, erythema multiforme, eczema, psoriasis, dermatitis herpetiformis, prurigo, rosacea and pruritus. The percentage of the nitrogen bodies was determined, together with any abnormality that might appear, such as the presence of acetone and increase of indican. A definite relationship was often observed between disturbance of the normal ratios and outbreaks in the skin. The conclusion seems justified that the fault lies chiefly in the intermediary metabolism, a view possibly supported by the effect of thyroid treatment. The autointoxication itself seems a result, not a cause of disturbed metabolism. Indicanuria indicates an accidental accession to the toxemia which has no relationship to disturbances in the nitrogen partition.

Case of Sarcoid.

DR. S. POLLITZER, New York, reported the case of a married woman, aged 35, with pulmonary tuberculosis, with large cavity in right lung, but well nourished and healthy looking. The cutaneous affection began about five years previously. When the patient was first seen, two and a half years ago, the lesions then present had not changed noticeably since their first appearance. Two years later the patient was seen again. All the old lesions persisted almost unchanged; a few seemed less infiltrated and less red; there was no atrophy and no scarring; but in the meanwhile new lesions had appeared. The latter, which had appeared four months before, was excised. One-half the lesions used for histologic study showed sharply defined areas of infiltration made up of epithelioid and a few giant cells, strongly resembling tubercle; there were no tubercle bacilli present. The other half of the lesion was injected intraperitoneally into three guinea-pigs which, when killed after six weeks, showed no signs of tuberculosis.

DR. JAMES C. WHITE, Boston, delivered the valedictory, which terminated the proceedings of the Sixth International Dermatological Congress.

Medicolegal

Drugs Required to Be Labeled in South Dakota.

Food and Dairy Commissioner Wheaton of South Dakota has ruled that, after Oct. 1, 1907, all prepared medicines of whatsoever description must be labeled and the label must give the common names of each separate ingredient. But the quantity of any ingredient need not be stated unless that ingredient be one of the drugs or any derivative thereof specifically named in the law. The drugs requiring quantitative statement are: Morphin, opium, cocain, heroin, alpha eucain or beta eucain, chloroform, cannabis indica, chloral hydrate, caffein, phenacetin, acetanilid and alcohol.

In order to close up the matter of old stocks by October 1, it is ruled that the following method of procedure will serve to identify and exempt old stocks: First, the retailer must stamp or label each article in his old stock, "On Hand October 1." Second, the retailer must file with the Food and Dairy Commissioner a complete inventory of all articles so stamped on or before Oct. 10, 1907. The retailer will be held strictly responsible for these provisions.

Emergency Treatment for Which Officers or Agents of Limited Authority May Bind Company.

The Supreme Court of Nebraska holds, in the personal injury case of Salter vs. Nebraska Telephone Company, that when a serious injury requiring immediate medical or surgical services is incurred by the employé of a company engaged in a business dangerous to its employés, and the injury is received at a place distant from the home of the injured party, any general officer of the company then present may engage such medical or surgical treatment and care as the case requires, and bind the company for the reasonable value thereof, without any proof on the part of the party furnishing such treatment and care that such general officer of the company had special authority to make such contract, or that such action on his part came within the general scope of his power and duties.

In case of serious injury to an employé under the circumstances above set out, if no general officer of the company is present, the highest officer or person highest in authority then present may bind the company for such services as the emergency may demand.

While not attempting to formulate any general rule to determine what constitutes emergency treatment for which a company will be liable under employment made by an officer or agent of known limited authority, it ought generally to extend for a time sufficient for the party employed to communicate with the company, and, if it decline to be further responsible, for notice to the proper poor authorities, if the injured party is entitled to public care.

Belief in Spiritualism, Etc., and Mental Soundness.

The Supreme Court of Indiana says, in the will case of Steinkuehler vs. Wempner, that it is well known that many of the clearest and brightest intellects have sincerely believed in spiritualism, mind reading, clairvoyance, witchcraft, and other vagaries, and it can not be said as a matter of law that such belief is the certain offspring or evidence of an unsound mind. A belief that spirits communicate with human beings through mediums is a conviction produced by some sort of evidence, and not a mere conception of a morbid fancy rising spontaneously in the mind, and so does not, by the fact itself, constitute an insane delusion.

A mere belief in spiritualism may be harmless and of no concern to anyone other than its possessor, but occult "revelations" can not be permitted to control the practical affairs of this world, and the belief on this subject and consequent conduct of the testatrix with reference to the making of her will was particularly relevant on the question of undue influence. It appeared that the will in question in this case was prompted, to some extent at least, by these spiritual communications, and it was the province of the jury under proper introductions to determine whether such "revelations" constituted such undue influence as invalidated the will.

Powers of County Boards of Health and Health Officers--Compensation of the Latter.

The Todd County (Ky.) Board of Health attempted by a resolution to put the charge of all cases of contagious or infectious diseases under the exclusive control of the health officer of the county, and it attempted to prevent any other person from seeing them at all, under penalties denounced by the board. The Court of Appeals of Kentucky holds that the county board of health, in taking this action, exceeded its jurisdiction and that the health officer, as the executive officer of the board, was not entitled to base any of his claim for salary on the performance of services not authorized by the lawful powers of the board. The statute, the court says, makes the compensation of members of the county board of health and the county health officer payable out of the county treasury, and requires the fiscal court to fix the compensation of these officials. The fiscal court, on the application of the health officer, fixed his salary at $150 per annum. He appealed to the circuit court, where the question of the reasonableness of the salary was submitted to a jury. Evidence was presented to show that for the services contemplated in the resolution of the county board of health $600 per annum was a reasonable compensation. On the other hand, it was shown that for the mere supervision of the health conditions of the county, as they pertained to the contagious diseases mentioned in the statute, $150 was a reasonable salary and the jury fixed it at that figure.

The court says that in carrying out the measures for the stamping out or prevention of contagious diseases the county boards of health are not empowered to interfere with the privilege citizens have of employing their own physicians in case of sickness, or to interfere with the right of regularly licensed physicians to practice their profession when so employed.

This court agrees that, in spite of such employments, the board of health may regulate proper quarantine security, and may require reasonable treatment to be administered or taken to eradicate such diseases; but to enforce the regulation is not to monopolize the practice of medicine in such matters, any more than it would be to monopolize that of nursing, feeding, or housing, or of labor necessary to carry quarantine into effect.

The health officer is the executive officer of the local board. He acts for it to execute its lawful demands in such matters. His duty is that of oversight and direction, more than personal execution. The resolution in question was far beyond the jurisdiction of the board to adopt. It may be necessary, and the court thinks it is, that for indigent persons infected with such diseases treated of by the statute the health officer is authorized to treat them, especially in the absence of adequate provision therefor by the fiscal court. But whether he treats them or not, he is authorized to oversee their treatment, and to require it to conform to that prescribed by the state board, if it has prescribed any, or by the county board in so far as such treatment tends to prevent the spread of the disease among others. The first object of the statute was to prevent the spreading of these highly contagious diseases, and not to take out of the hands of people the selection of their own means to cure such diseases in themselves, provided such means are reasonably calculated to prevent the spread of the disease to others.

As to the contention that the compensation fixed by the jury was palpably against the evidence, the court says that it admits that it looked small enough, but it would have more trouble on this score except for the fact that the plaintiff had performed the same duties for three years at the same compensation. The increase was sought, it is presumed, on the supposed increase of labors and responsibilities under the county board's resolution. So the plaintiff's witnesses who testified favorably to a larger salary based their opinions on the same erroneous premise. However, the fiscal court, the plaintiff by his own previous conduct, the jury, and the trial judge in overruling the motion for a new trial all agreed that $150 was a fair value of the services. This court does not feel at liberty on this record to disturb the judgment, which is therefore affirmed.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

September 28.

1 *Obesity, Gout and Diabetes Mellitus, Considered as Diseases of Cell Metabolism. W. Ebstein, Göttingen, Germany.
2 *Is There Surgical Treatment for Constipation? C. B. Kelsey, New York.
3 *Therapeutic Value of Apomorphin Hydrochlorid. E. L. Fisk, New York.
4 *Clinical Significance of the Symptom Headache. A. Castelli, New York.
5 Relationship of the Life Insurance Company to the Applicant Showing Glycosuria. T. S. Hart, New York.

1. **Obesity, Gout and Diabetes.**—Ebstein groups these three diseases in one class, as hereditary diseases of cell metabolism. Obesity appears to be due to a deficiency of cell activity, rendering the subject unable to consume in the same degree as is the case with non-corpulent persons, the fatty acids that appear in their intermediate metabolic processes. Gout depends on the disturbance in an intermediate state of metabolism, namely that of the nucleins, and this, too, is due to a hereditary tendency. In diabetes we find an anomaly of carbohydrate metabolism—dextrin and other sugars, acetone, acetic acid, and β-oxybutyric acid, which are completely destroyed in the healthy organisms, appearing in the urine. There is a diminished excretion of carbonic acid gas, a property of which Ebstein considers to be the retarding of the action of the diastatic enzymes, which makes it the regulator of the formation of sugar from the glycogen stored up in the biogens. When the action of the diastatic enzymes is insufficiently regulated, because there is lack of carbonic acid in the presence of the diminished internal respiration, the almost indiffusible glycogen is more rapidly transformed into the extremely diffusible sugar, which thereupon appears immediately in the body fluids and then in the urine; so that Ebstein thinks that the glycosuria in diabetes is due to the fact that the sugar present, or formed during the intermediate steps of metabolism, is more or less completely excreted before it can be assimilated by the whole organism. He does not regard diabetes mellitus as a symptom of the disease of various organs, but as a disease *sui generis*, the first cause of which lies in a deficient character of the protoplasm, that is, transmissible by inheritance.

2. **Surgical Treatment for Constipation.**—Kelsey reviews the efforts made to establish a legitimate operative treatment for chronic constipation by stretching or division of the mucous folds, vibratory massage, straightening and anchoring of the sigmoid, first devised by himself, and asks, doubtingly, whether or not any good results have been observed.

3. **Apomorphin Hydrochlorid.**—Fisk sums up his considerations on the therapeutic value of apomorphin hydrochlorid practically as follows:

1. The effect of apomorphin hydrochlorid, when administered by the mouth, is widely different from the hypodermic effect.
2. Hypodermically, it is a most valuable centric emetic in doses of from 1/20 to 1/6 grain, acting speedily, certainly, and gently, even in cases of narcotic poisoning prior to the stage of coma. The average adult dose is 1/10 grain. He also recommended that it be tried in all cases in which hypnotics or antispasmodics are indicated, in doses preferably somewhat less than the emetic dose, depending on the tolerance of the individual, i. e., 1/40 grain or more.
3. When given hypodermically to children or debilitated subjects the possibility of its depressing effects should be borne in mind, and appropriate doses of strychnin simultaneously administered.
4. By the mouth, its centric effects are so uncertain as to render it useless as an emetic and of little value as a hypnotic. The effect is practically limited to expectorant action. The average adult dose is ⅛ grain every two or three hours, dissolved in syrup of wild cherry or syrup of lactucarium, with a few drops of dilute hydrochloric acid to insure solution.
5. It does not increase the effect of other narcotics, such as morphin, codein, or heroin, which may be simultaneously administered when it is desired to lower the excitability of the respiratory center without checking secretion. Strychnin may also be simultaneously administered in debilitated subjects for its stimulating effect on the respiratory center and to forestall possible depression; although even in the case of delicate children there is little fear of such depression from the administration of the pure crystalline preparation by the mouth.
6. Apomorphin, like other expectorants of its class, if used at an improper stage, when there is abundant secretion, or pushed to the extreme, may flood the bronchial tubes with mucus and drown the patient in his own secretion, especially if he lacks muscular power to expectorate. Such results, however, are not to be feared from an intelligent use of the remedy.
7. Crystalline apomorphin hydrochlorid should always be specified. There is a slight danger of adulteration with morphin if the drug is not thoroughly washed when manufactured. On general principles, the fresh preparation should be used if possible, but a greenish discoloration of tablets or solution does not necessarily contraindicate their use, especially if originally prepared from the pure crystalline salt by a reliable drug firm.

4. **Headache.**—Castelli states that the order of frequency of headaches is as follows: (a) Frontal, (b) temporal, (c) occipital and bregmatic, (d) parietal. The concomitant symptoms intelligently comprehended enable us to recognize their various causes. Almost all headaches are produced by the absorption of toxic products, so that the author suggests, for the vague and imperfect diagnosis of toxemic headache, such terms as cephalalgia alcoholica, intestinalis, saturnina, oxycarbonica, malarica. We ought to educate our patients, he says, not to expect to be relieved immediately, but to submit to the rational and therapeutic course best adapted to the case.

New York Medical Journal.

September 28.

6 *Dermatitis Exfoliativa Neonatorum (Ritter's Disease). E. P. Carlton, Chicago.
7 In Memoriam of Professor J. Grancher, of Paris, 1843-1907. S. A. Knopf, New York.
8 Automatic Grafting of the Hand for Deforming Cicatrix. R. Bellantoni, New York.
9 *How Far May the General Practitioner Employ and Benefit from Laboratory Methods of Diagnosis? R. N. Willson, Philadelphia.
10 *Aural Vertigo and Ménière's Syndrome. W. A. Wells, Washington, D. C.
11 *Materialism in Medicine. C. D. Hill, Jersey City, N. J.
12 *Chronic Myocardial Disease. C. Schram, New York.
13 *Adynamic Ileus. F. L. Koontz, Louisville.

6. **Dermatitis Exfoliativa Neonatorum.**—Carlton details the history of this disease, and reports a case of his own in which recovery ensued. The prognosis, generally speaking, is grave, as in about 50 per cent. of the cases reported death has ensued. The usual diseases to be excluded are erythema neonatorum, erysipelas, acute eczema, pemphigus neonatorum, and syphilis. The disease essentially consists of some erythema, turgescence of the skin, a variable amount of exudation and subsequent exfoliation of the entire outlying epidermis. Its onset is acute and it spreads rapidly. The treatment in the author's case included no internal medicine whatever, and consisted of the use of mild antiseptic powders or bland oil with an added antiseptic.

9. Abstracted in THE JOURNAL, July 20, 1907, p. 269.

10. **Aural Vertigo in Ménière's Syndrome.**—Wells details the anatomy and physiology of the labyrinth, and says that equilibration is probably regulated by three sets of afferent impulses, namely: 1. Labyrinthine; 2, visual; 3, kinesthetic. By the latter he refers to the impulses accorded by tactile, muscular and perhaps also to a certain extent, visceral sensation. The occlusion of these impulses explains the slow, hesitating, uncertain movements of patients deprived of their labyrinth, when their bodies are submerged in water; they lack the compensating assistance of tactile sensation. A similar condition prevails with respect to vision. In distinguishing, for instance the visual from auditory vertigo, if on the patient closing his eyes, his condition improves, we infer an ocular origin; if it is no better, or is worse, a labyrinthine. Vertigo must be clearly distinguished from dis-equilibration and from inco-ordination; vertigo is a purely psychic phenomenon; a subjective consciousness of disturbed spatial relations; dis-equilibration is a physiologic phenomenon, being an objective motor manifestation, occurring as a consequence of deranged orientation, while inco-ordination consists of the inharmonious action of muscles, because of the lack of control ordinarily exercised by the co-ordinating center in the cerebellum. Vertigo may arise from any cause that will interfere with the mechanism of orientation and equilibration, whether the lesion be situated in the peripheral receptive organs, in the intermediary transmitting apparatus, or in the central organs of co-ordination and perception. The pathologic basis claimed for Ménière's disease is a rare condition seldom capable of demonstration, and clinical and postmortem studies demonstrate the impossibility of distinguishing the symptoms occurring in such a case from those observed in a variety of aural affections without the symptom of hemorrhagic exudation in the semicircular canal which has been assumed to be the base of the

syndrome present in Ménière's disease, viz., tinnitus, vertigo, and deafness, occurring in the form of an apoplectiform attack. He therefore suggests the substitution of "Ménière's syndrome" for "Ménière's disease," as applying to a well-known group of symptoms occurring in connection with various diseases of the ear. He reports three cases.

11. **Materialism in Medicine.**—Hill pleads for proper consideration for the mental factor of the patient in medicine, and gives instances to show the vast effect it may have, of which the following is an example: Just examine a man to-day for life insurance and six months afterward for a pension, and you will wonder that one small body could have become so sorely afflicted in that short time. At the first examination the man forgets that he was ever sick, and at the second examination does not remember when he was ever well; and this forgetfulness is not wholly with intent to deceive.

12. **Chronic Myocardial Disease.**—Schram says that the more carefully we analyze the individual symptoms occurring in the case of myocarditic disease the less dependence we shall find that we can place on any one of them for diagnosis. Acute infections are etiologically potent in its production. The fever makes greater demands for cardiac activity and gives less time for diastolic recuperation. Toxins cause fibrillar degeneration as well as disturbance of the blood pressure. Early rising from convalescence throws extra burden on the heart before the fibrillæ have had time for recuperation. Myocarditis does not thrust itself on the physician's attention, the stethoscope may fail to show any material variation from normal heart sounds. In the case of diphtheria, weeks, months, and even years of comparative well-being may intervene between the diphtheritic process and the manifestation of the myocarditis initiated thereby. The author first considers causes which, at first operative in producing acute myocarditis still potentially retrogressive to the normal, often result in chronic disease, for instance, acute rheumatic polyarthritis, typhoid, scarlet fever, measles, lobar pneumonia, erysipelas, ordinary septic infection and puerperal septicemia. It is doubtful if gonorrhea invades the myocardium. He lays special emphasis on influenza in relation to myocarditis. He then turns to the consideration of those causes—arteriosclerosis, syphilis, chronic nephritis and lithemia and chloroform anesthesia—which, insidious and slow in their development, terminate in chronic irreparable conditions. After considering the symptoms and dwelling on three phenomena characteristic but not pathognomonic of chronic myocarditis, namely, Cheyne-Stokes respiration, the Stokes-Adams syndrome, and angina pectoris, he discusses the treatment, laying stress on the following points: We have to deal with a chronic disease capable of quiescence, possibly permanent, but ordinarily slowly progressive. The heart will never be capable of more work than the present state of its parenchyma warrants. While temporary weakness from overstrain may be amenable to treatment, any call for more work means further degeneration. It affects all the constituent tissues, the muscular fibrillæ, the circulatory, nervous and ganglionic apparatus, the last perhaps least. It may be localized, as, for example, externally from a pericarditis, internally, from bacterial invasion, affecting perhaps the papillary muscles alone, or from an infarct; or diffuse as from syphilis, lead or phosphorus poisoning. Compensatory hypertrophy does not take place as when increased resistance is to be overcome due to valvular defect within, or arteriosclerosis without. Extra-organic and vascular complications usually exist. He urges the necessity of absolute rest until the manifestations of failing heart energy, be they cerebral, respiratory, digestive, hepatic or renal, have been relieved. Not till then is it safe to begin the Nauheim treatment; even then, the exercises must be administered by an operator not only well-qualified to give them, but also competent to watch respiration, arterial and capillary circulation, and to appreciate the symptoms of fatigue. With drugs we can influence the circulation, the blood pressure can be raised or lowered, the myocardical contractions hastened or slowed, the blood diverted to certain regions or particular organs, its volume increased or diminished, and its quality determined by diet or medication. Irritation and restlessness at the outset may be allayed by camphor monobromid in doses of from 2 to 5 grains. Nitroglycerin is the appropriate remedy for a heart that must be relieved and is incapable of responding to stimulation. Syphilis, known or suspected, calls for mercury and sodium iodid in small doses frequently repeated. Strychnin and cereus grandiflorus stimulate the nervous apparatus but contract the arterioles as well as the heart. In neurotic types of myocarditis he states that convallaria majalis should be tried.

13. **Adynamic Ileus.**—Koontz divides ileus into two great classes, 1, those due to peritonitis and overdistension, and 2, those of central nervous origin. When therapy fails, the treatment is enterostomy, which should be resorted to under two combinations of circumstances only. In the first class of cases the surgeon performs laparotomy in order to determine with certainty the presence of mechanical causes; if any are found, he attempts to do the ideal thing by removing them, even though it requires resection. He then determines the amount and degree of the adynamic element present. If in his judgment the operation will not free the patient from the danger of meteorism he brings up a loop of intestine, stitches it in the wound, and, after closing the wall, incises the gut. If he has found a simon pure case of adynamic ileus, he does an enterostomy at once. The other class of cases includes those in which the condition of the patient will not permit of general anesthetic exploration. Koontz then rapidly opens the abdomen under cocain, picks up the first presenting loop of intestine, fixes and opens it. It is a peculiar thing that the first presenting loop of bowel is the proper one to open. It is a rule that nearly always holds good, and is easily explained when we stop to think that the loop which contains the most gas will rise the highest. For the first few hours after opening the bowel little will pass; but as the excess escapes slowly through diffusion the muscle is relieved and regains tone. Gathering power then at every moment, it soon empties itself of such an enormous quantity that it will tax the nurse to take care of it.

Boston Medical and Surgical Journal.

September 26.

14 *Pulmonary Tuberculosis and the Roentgen Rays. P. Brown, Boston.
15 *Channels of Infection in Tuberculosis. T. Smith, Boston.
16 *Separate Nursing and Isolation in Typhoid Fever. E. P. Joslin and C. L. Overlander, Boston.
17 Justifiable Homicide. (To be continued.) C. G. Cumston, Boston.
18 Case of Fracture into Acetabulum with Separation at Sacro-iliac Synchondrosis. J. D. Adams, Boston.

14. **Roentgen Ray in Pulmonary Tuberculosis.**—Brown says that mental impressions of two kinds are produced by observing these phenomena in a proper manner and may be described as two types: One type is an impression of the moving picture of respiration and its phenomena, or any abnormality connected with them; the other type is the impression produced by abnormal shadows of varying density, implying an inability on the part of the tissue in question to produce normal shadows. On these two types of impressions is based the matter of the recognition of intrathoracic disease by the *x*-rays. The first of these phenomena is seen in the visual perception of the shadow complex as cast on the fluorescent screen; the second by the permanent record of the Roentgenogram. He does not think that the latter method can supplant fluoroscopy, because the diagnostic plate can not show moving structures; it can not enable the operator to increase or lessen at his pleasure the penetrating strength of the Roentgen rays in the course of a single exposure; it can show but one aspect of the patient at a time, and changes of position demand additional exposures. On the other hand, the fluoroscopic screen can not present its image for a permanent record, and the complete image is not so plainly conveyed to the mind of the observer. Further, when subsequent examinations of the same shadow complex are necessary they can not be had by the fluoroscope. On these grounds Brown says that we must accept and use both the screen and the Roentgen picture, which often enables us to recognize the invasion of pulmonary tuberculosis at an earlier stage than by other measures, such as auscultation and percussion, the tuberculin test, staining fluids and the microscope, which, however, must not be discarded.

15. **Channels of Infection in Tuberculosis.**—Smith considers the questions of ingested and inhalation tuberculosis, of cow's milk and tuberculosis and the restriction of bovine tuber-

culosis as well as the outlook concerning specific therapy in tuberculosis viewed from the experimental and comparative standpoint. From the first three of these considerations—those on human and bovine tuberculosis—he thinks the following conclusions are warranted:

1. The coughing consumptive is the chief source of infection.
2. The digestive tract is not the exclusive or even predominating portal of entry for pulmonary phthisis. It is highly probable that most cases are due to inhalation or aspiration.
3. In infants the bacilli probably gain entrance through all portals more easily than later in life, and the disease becomes more easily generalized. There are no rational grounds for believing that latency in infancy plays an appreciable rôle in the disease of later decades, but ingestion probably does play a much more important part in infantile tuberculosis, owing to habits and susceptibility of this period of life, than has been granted heretofore.
4. Bovine tubercle bacilli are found associated with a certain, at present not fully calculable, proportion of cases of abdominal and cervical lymph-node tuberculosis in infants and children.
5. There is at present no evidence that bovine bacilli may be transformed and assume the human type in the human body.
6. The discharge of tubercle bacilli into the milk of cows may take place abundantly in udder tuberculosis. In a small proportion of manifestly tuberculous cows without evidence of udder disease, it may take place at times in very small numbers.
7. A reasonable restriction of bovine tuberculosis below the danger limit to man is possible with the aid of tuberculin and segregation, and the removal of clinical cases and of udder disease. An eventually complete elimination can be brought about in this way in any herd, provided other domestic animals, such as pigs, cats and dogs, are kept under control as possible reintroducers of the infection.
8. The complete elimination of bovine tuberculosis may be hoped for in the distant future. An active cooperation of individuals with municipal, state and national forces, by exerting a steady pressure and diffusing more knowledge among farmers as to the nature of tuberculosis and the use of tuberculin, may lead to its final disappearance.
9. The factor of bovine tuberculosis in the human malady is not of such importance that it should be permitted to imperil the proper execution of measures designed to relieve and cure the strictly human disease, or divert attention from it as the chief evil.

With regard to specific therapy, his considerations lead to the three following propositions:

1. Serum therapy is at best a temporary palliative method in infectious diseases which are long drawn out, and which must finally be met by the specific resources of the body itself.
2. The need of discriminating power on the part of the practicing physician between individual and individual in the application of remedies which stimulate the production of antibodies. He is evidently not going to be eliminated by an advance in medical science. In fact, he must be better trained than ever, especially in the fundamental principles of immunity — a subject quite new, but already rich in acquisitions, which may be called the physiology of the infectious diseases.
3. To each human being are given certain talents to husband and develop and not to squander, for therapy can not add to them. It falls to the lot of the physician to discover during disease the size of those hidden talents, if he can, and to utilize and manipulate them in the best interests of his patient.

16. **Isolation in Typhoid Fever.**—Joslin and Overlander urge the desirability of separate wards and nurses for typhoid cases in hospitals, or at least, the giving up of one side or end of a ward to typhoid cases, so that such patients may be grouped together. Such a course would be an economy in hospital administration and would also aid in lessening the dangers of exposure to infection.

Lancet Clinic, Cincinnati.

September 28.

19 Feminalities. B. M. Ricketts, Cincinnati.
20 Surgical Treatment of Thick and Everted Lips. C. C. Miller, Chicago.
21 Neglect of Pauper Cases in Public and Eleemosynary Hospitals. B. Holmes, Chicago.
22 Impressions of the Eastern Hospitals. G. H. Baker, Cincinnati.

Bulletin Johns Hopkins Hospital, Baltimore.

September.

23 Teaching of Pathologic Physiology. W. G. MacCallum, Baltimore.
24 *Relation of Iodin to the Parathyroid. W. L. Estes and A. B. Cecil, Baltimore.
25 Pancreatic Atrophy in Dog Following Impaction of Calculi in the Duct. R. D. McClure, Baltimore.
26 Tetany After Parathyroidectomy, in Herbivora. W. G. MacCallum. H. S. Thomson and J. B. Murphy, Baltimore.
27 Parathyroids of the Horse. W. L. Estes, Jr., Baltimore.
28 *Pathologic Anatomy of Lymphosarcoma. W. G. MacCallum, Baltimore.
29 Anatomy of a Myxedematous Idiot. W. G. MacCallum and M. Fabyan, Baltimore.
30 *Leiomyomata of the Gastrointestinal Tract. M. Fabyan, Baltimore.
31 Disseminated Subcutaneous Fat Necrosis in Infants. M. Fabyan, Baltimore.
32 Primary Carcinoma Supervening in Cirrhotic Liver. M. Fabyan, Baltimore.
33 Anatomic Relations in Congenital Cystic Kidney. F. M. Meader, Baltimore.
34 *Phlegmonous Gastritis. A. B. Cecil, Baltimore.
35 *Occurrence and Physiologic Nature of Glandular Hyperplasia of the Thyroid. D. Marine, Cleveland, Ohio.
36 Experimental Epithelial Proliferation of Skin and Mucous Membranes. H. F. Helmholz.
37 Experimental Multiple Chondroma. H. F. Helmholz.
38 Two Cases of Atresia of Small Intestine. H. F. Helmholz.
39 Syncytiomatous Tumor of the Stomach. H. F. Helmholz.
40 *Relation of Intestinal Infection to Visceral Tuberculosis. G. H. Whipple, Baltimore.
41 *Hitherto Undescribed Disease Characterized Anatomically by Deposits of Fat and Fatty Acids in Intestinal and Mesenteric Lymphatic Tissues. G. H. Whipple, Baltimore.
42 *Pancreatitis and Focal Necrosis. G. H. Whipple, Baltimore.

24. **Iodin and the Parythyroids.**—Estes and Cecil, as the result of experiments embracing a wide field, conclude: 1. Iodin as a constituent of the parathyroid may, generally speaking, be neglected. 2. If present at all iodin occurs in such minute quantities as to be of no functional significance. 3. We fail to find chemical grounds for the hypothesis of the thyroid system of organs.

28. **Lymphosarcoma.**—MacCallum concludes that the distinction which may be drawn between the true round celled sarcoma and lymphosarcoma depends not so much on the histological characters of any isolated portion of the tumor as on the determination of the point of departure of the growth, the manner of growth, and the manner of distribution.

30. **Gastrointestinal Myomata.**—Fabyan describes a case showing the following interesting points: (a) The marked involvement of the skin with fibromata mollusca; (b) the association of this condition with gastrointestinal myomata; (c), the multiplicity of the gastric myomata; (d), the constant involvement of the outer layer of the muscularis in every instance; (e), the presence of subcutaneous hemangiomata.

34. **Phlegmonous Gastritis.**—Cecil describes a case occurring in a woman, aged 25, in the Johns Hopkins Hospital, and prefixes an abstract of all cases described since 1896. Bacteriologic examination of the purulent fluid exuding from the stomach wall in the present case showed a number of bacilli, usually in pairs, with a much larger number of smaller organisms, somewhat lanceolate in form, about the size of the pneumococcus, and occurring in pairs. These stained very badly, and many of them seemed to be mere shells; in other instances, they looked like bacilli with polar staining and a clear space in the center. The paired bacilli described were rather stout, and stained very brilliantly. Sections of the stomach wall stained by Weigert's method showed only one type of organism, but in immense numbers, both inside the leucocytes and free. They were diplococcus forms, somewhat lanceolate. On culture, no colonies of cocci appeared, but only *Bacillus coli communis*. The author considers it probable that the colon bacillus was the secondary invader and that the coccus forms which failed to grow in the cultures, were the actual causative factor.

35. **Hyperplasia of the Thyroid.**—As the result of careful study Marine concludes:

1. Iodin is essential for normal thyroid activity.
2. Glandular hyperplasia is a physiologic reaction to a deficiency, and it is to be considered cretinoid in nature.
3. Colloid goiter is usually preceded by a stage of glandular hyperplasia, and in its uncomplicated form is the quiescent stage of the same.
4. The associated enlargement of the spleen, thymus and lymph glands, in varying degrees, is an integral part of the affections.
5. The dangers associated with ether anesthesia in dogs are similar to those observed in toxic (exophthalmic) goiter and lymphatism in man.
6. The commercial desiccated thyroid contains a mixture of normal and abnormal thyroids, and that this explains a part of its varied action clinically.
7. Further observations will show a closer relationship between the glandular hyperplasias in animals and toxic (exophthalmic) goiter in man than has been indicated.

40. **Intestinal Infection and Tuberculosis.**—Whipple, as the result of a study of many cases of tuberculosis, acute miliary, subacute, chronic, and local, arrives at the following conclusions: The tubercle bacillus can not pass from the intestine through the lacteals, mesenteric glands, and thoracic duct into the lungs without leaving some record of such passage. Under favorable conditions a few bacilli may be swept along this course to the lungs, but the majority certainly will lodge in the glands, and in time cause a tuberculous process which can be recognized. When the mesenteric glands are not involved the intestinal tract may be excluded as the portal of entry, but the converse does not hold for the tuberculous mesenteric glands which may be secondary to some pulmonary focus that is discharging tubercle bacilli into the alimentary tract. The

thoracic duct is often the distributing agent in cases which show scattered tubercles in the viscera and tuberculous mesenteric glands.

41. **An Undescribed Disease.**—Whipple describes a case characterized clinically by a gradual loss of weight and strength, stools consisting chiefly of neutral fat and fatty acids, indefinite abdominal signs, and a peculiar multiple arthritis. The diagnosis lay between neoplasm and tuberculosis of the mesenteric structures. Pathologically the lesions of interest were found in the intestines and the lymphatic tissue draining this region. The intestinal mucosa showed enlarged villi due to deposits of large masses of neutral fats and fatty acids in the lymph spaces and an infiltration of the interglandular tissue by large mononuclear and polynuclear giant cells. The submucosa in many places showed similar deposit in the enlarged lymph spaces and invasion by large mononuclear cells. The mesenteric glands in gross showed the most striking changes, but under the microscope the picture closely resembled that seen in the intestine. The glands showed the same deposits in even greater amounts, and a chronic inflammatory reaction with replacement of much of the gland tissue by fibrous scar tissue, masses of large mononuclear cells or polynuclear giant cells of the foreign-body type. The lymphatic tissue of the bronchial glands, bone marrow, and lungs showed no abnormalities of importance. No changes that seemed related to the intestinal lesions were found in the other organs. Whipple considers that in this case we have to deal with some obscure disease of fat metabolism. He suggests the term, intestinal lipodystrophy.

42. **Pancreatitis and Focal Necroses.**—Whipple, after studying 41 cases of focal necroses, six cases of acute diffuse pancreatitis, five cases of fat necroses, 7 cases of acute hemorrhagic pancreatitis, and 222 cases of chronic pancreatitis, arrives at the following conclusions:

1. "Focal necroses" are found in the pancreas in many acute intoxications: pneumonia, septicæmia, peritonitis, typhoid fever.
2. The same necroses are present in acute diffuse pancreatitis and in many cases of fat necrosis and hemorrhagic pancreatitis. It seems probable that these necroses are factors which predispose to pancreatic fat necrosis and hemorrhage.
3. Chronic diffuse pancreatitis and icterus as well are important predisposing factors.
4. "Focal necroses" and acute diffuse pancreatitis may be the etiologic factors in some cases of chronic diffuse pancreatitis.
5. A moderate degree of cirrhosis of the pancreas is a common finding at autopsies.
6. The islands of Langerhans are rarely involved by this cirrhosis.

University of Pennsylvania Medical Bulletin, Philadelphia.

September.

43 *The Leucocyte and Streptococcus Content of Cow's Milk. D. H. Bergey, Philadelphia.
44 Regeneration of Bone. (Continued.) H. S. Wieder, Philadelphia.
45 Improvements in the Sterilization of Culture Media. D. Rivas, Philadelphia.

43. **Cow's Milk.**—Bergey draws the following conclusions from investigations into the relation of leucocytes and streptococci to cow's milk:

1. Of the different methods proposed for determining the presence of pus in cows' milk that of Trommsdorff is the simplest and at the same time yields the most reliable and concordant results.
2. Practically all milk contains some leucocytes and streptococci. Only when these constituents are increased to a certain extent are they indicative of pathologic conditions in the udder.
3. In practically all cases in which the number of leucocytes is high there will also be found a relative increase in the number of streptococci, indicating the presence of mastitis in one or more quarters of the udder.
4. Careful palpation of the empty udder, by a competent veterinarian, usually reveals the presence of an indurated area in the infected quarter of the udder.

Therapeutic Gazette, Detroit.

September.

46 Prophylactic Measures Guarding Against the Development of Landau Cases of Visceroptosis. A. Bassler, New York.
47 Summary of Certain Forms of Surgical Practice. W. W. Babcock, Philadelphia.
48 Principles Underlying Treatment of Tuberculosis. F. M. Pottenger, Monrovia, Cal.
49 *Therapeutic Action of Convallaria. W. Lenneker, Chicago.
50 *Home Treatment of Tuberculosis. W. M. Donald, Detroit.

49. **Convallaria.**—Lenneker has had very extensive and very successful experience with this drug. It has none of the disagreeable by-effects and after-effects of digitalis—the cumulative character and the disturbance of the stomach—being itself one of the best stomachic tonics we have. It may be used to excellent advantage, he states, in tobacco heart, in the asthmatic breathing from enfeebled heart, and especially in chronic asthma. He has never seen any good effects from combining strophanthus with convallaria.

50. Abstracted in THE JOURNAL, July 13, 1907, page 180.

Archives of Pediatrics, New York.

September.

51 *Points in Infantile Tuberculosis. L. E. Holt, New York.
52 *Chylothorax in Children. D. H. Sherman, Buffalo.
53 *Symptoms of Typhoid Fever in Infancy and Childhood. O. M. Edwards, Jr
54 Review of the Recent Efforts to Improve New York's Milk Supply. L. R. Williams, New York.
55 *Rheumatic Carditis in Infants. J. M. Patton, Chicago.
56 Case of Imperforate Anus in which the Rectum Communicated with the Bladder. C. A. E. Codman and J. H. Jopson, Philadelphia.
57 *Bacterial Inoculations in Multiple Abscesses and Superficial Gangrene of Toes. N. Gildersleeve and H. C. Carpenter, Philadelphia.
58 Case of Rheumatoid Arthritis in Child of Six Years. E. D. Fenner, New Orleans.
59 Intubation in Whooping Cough with Severe Laryngospasms Followed by General Spasms. W. L. Johnson, St. Louis, Mo.

51. **Infantile Tuberculosis.**—Holt details certain observations that tend strongly to confirm the opinion that direct contagion is responsible for most of the tuberculoses of infants, rather than infection through milk or other foods. With regard to lumbar puncture in tuberculous meningitis, Holt says, as the result of a study of 42 cases in the Babies' Hospital, that it may be assumed that the bacilli are always present in the cerebrospinal fluid, and that they can be found, provided a sufficient degree of care is exercised in searching for them. The bacilli are usually more numerous in late puncture than in the early stages of the disease. He describes the method used at the Babies' Hospital:

> The fluid is allowed to stand in the test tube for twelve hours. If a film forms by the coagulation of fibrin in the fluid, this is fished out with a platinum loop and stained. Such film formation occurs in about half the cases, and in it the bacilli are pretty certain to be entangled. If no film forms, the sides of the tube are scraped with a platinum loop. If the bacilli are not found in this way, the fluid is centrifuged. The chances of success after centrifuging are greatly increased by adding to the fluid one or two drops of blood. As a matter of routine, it has been found desirable to draw a single drop of blood with the very last fluid coming from the spinal canal. This is usually done by producing a slight movement with the needle before withdrawing it. The additional fibrin also aids the film formation and thus adds greatly to the facility of finding the bacilli.
>
> Another procedure sometimes successful is to superimpose drops on a slide. The first drop is placed and allowed to dry on; afterward a second one on the same spot, then a third, a fourth, and so on, and occasionally bacilli are found when their number is very small.

52. **Chylothorax in Children.**—Sherman reports on over 60 cases of chylothorax, 13 being in children. He summarizes the conclusions as follows: 1. Apparent late appearance of effusion after accident, which was supposed to be the cause. 2. Fat percentage higher than that generally accepted for chyle. 3. Absence of sugar does not necessarily preclude the effusion being chyle. 4. Complete aspiration seemed of avail. 5. Percentage of recoveries in children ranged from 45 to 55 per cent.

53. **Typhoid in Infancy.**—Edwards says that the fetus may be infected from the mother, in which case it generally dies *in utero* and is expelled, but it may be born alive and well, having escaped the infection, or be born suffering from the disease. The mortality is high. Typhoid fever is rare under 2 years of age, and acute onset is more common than with older children. The duration is shorter in infants. The rose spots are found less often in infants than in older children. Anorexia is not so pronounced in infancy. The temperature is higher in females than in males. Cardiac weakness is less common than in adults. Typhoid bronchitis is common in childhood and is generally early. The tongue in childhood seldom becomes dry; it is generally moist and coated, with the edges and tip red. Tympanites is observed more frequently in older children; vomiting is more frequent in children than in adults and generally occurs early, often the first symptom. Diarrhea is more constant in children than in adults; intestinal hemorrhage is very rare and intestinal perforation even more so; splenic enlargement is common. Epistaxis is less common in children than in adults; headache is frequent but of a mild type. Apathy is characteristic of typhoid in childhood. Transitory aphasia is more common in children than in adults. Febrile albuminuria is distinctly less. Loss of weight is more frequently seen, but is less marked. The tendency to relapses

and to recrudescences is more pronounced than in adults. Complications in childhood are infrequent and mild. Laryngeal affections are less frequent, bronchitis is common, and chorea not rare. Among the rare complications are lobar pneumonia, pleurisy, empyema, coma vigil, subsultus, pericarditis and endocarditis, parotiditis; more often are found broncho-pneumonia, myocarditis, furunculosis; bed sores are less common. In the absence of any help from the laboratory, a positive diagnosis only is justifiable if the case shows an enlarged spleen, roseola, abdominal symptoms, and continued fever. The prognosis in children is good, but is graver the younger the infant.

55. **Rheumatic Carditis in Children.**—Patton considers the subject in detail, and in regard to treatment insists on the importance of prolonged rest. In his experience salicylates are effective; in children from 5 to 10 years old, from 5 to 8 grains are given every four hours, combined with sodium bicarbonate or potassium acetate, or both. After convalescence he gives small doses of the iodid of sodium or strontium, or of hydrochloric acid. Strychnin must be used with caution; children do not bear it well. Digitalis should be used in the acute stage only if the heart is dilated and unduly exerted; the tincture is the best preparation. Alcohol is of value in exhaustion or threatened collapse. The ice bag quiets the excited heart and relieves pain. When the fever is high and the heart excited, and there is restlessness, from 5 to 10 grains of sodium bromid, with a quarter of a drop of tincture of aconite, and a teaspoonful of sweet spirit of nitre, every two hours, will be found useful. In severe pain codein and sodium bromid may be administered.

57. **Bacterial Inoculation in Multiple Abscesses.**—Gildersleeve and Carpenter report the case of a child suffering from multiple abscesses and superficial gangrene, which made a rapid recovery when treated with autogenous bacterial inoculations, together with the betterment of hygienic surroundings.

Long Island Medical Journal, Brooklyn.

September.

60 *Recent Advances in Intestinal Surgery. A. T. Bristow, Brooklyn.
61 *Out-Door Treatment of Tuberculous Joints. W. Truslow, Brooklyn.
62 *Ocular Manifestations of Bright's Disease. J. C. Hancock, Brooklyn, N. Y.
63 Trachoma. S. B. Allen, Riverhead, L. I.
64 *Physiology of Sleep. R. Durham, Brooklyn.
65 *Rational Treatment of Neurasthenia. R. S. Cone, Brooklyn.
66 Lateral Aberrant Thyroid. P. M. Pilcher, Brooklyn.
67 Lateral Sinus Thrombosis, Presenting Unusual Features. J. E. Sheppard, Brooklyn.

60. **Advances in Intestinal Surgery.**—Bristow's article emphasizes the fact that the advances in intestinal surgery have followed improvements in diagnosis and a simplification of the technic, and he urges attention to the time-honored motto, *non nocere*.

61. **Tuberculous Joints.**—Truslow reviews the treatment of these cases in various places abroad and in the United States, and arrives at the conclusion that the combination treatment of the orthopedic fixation of the joint involved with a rigid oversight of the general condition is best obtained at special out-of-town sanatoria and hospitals.

62. **Ocular Manifestations of Bright's Disease.**—Hancock's paper emphasizes the great diagnostic and prognostic importance of albuminuric retinitis and the fact that retinitis is often the first symptom noticed, even when the kidney disease is of old standing.

64. **Sleep.**—Durham reviews the various theories that have been advanced to explain the physiology of sleep and concludes that positive proof of the cause of sleep is yet to be found.

65. **Neurasthenia.**—Cone divides the treatment of neurasthenia into (a) the best means of improving nutrition of the entire nervous system, and (b) the treatment of the patient himself by psychical influence (autosuggestion). The first may be accomplished by the morning bath, as cold as is followed by a good reaction, attention to the bowels, abundance of plain, well-cooked, easily digested food, no stimulants, outdoor exercise, and abundance of sleep, which last may be aided by a hot bath before retiring; careful attention to the clothing, absence of excess of all kinds, and use of drugs only as indicated. The second point is to turn the patient's mind into new channels, so as to exercise new brain cells and give the ones that are worked out a chance to rest and recuperate. He classifies neurasthenia as follows:

I. CEREBRAL NEURASTHENIA.

Manifested through the intellect, emotions, memory and will.—As worry, anxiety, forgetfulness, restlessness, irritability, insomnia, self-consciousness, despondency, drowsiness, mental confusion, horrible dreams, somnambulism, love of solitude, the "phobias," aphasia, lack of concentration, loss of ambition, and tendency to suicide.

II. SPINAL AND SYMPATHETIC NEURASTHENIA.

Manifested through (a) Nervous System (N. S.).—"Nervous" neurasthenia, as painful spots, nervous deafness, amblyopia, headache, neuralgia, tinnitus, hyperesthesias and paresthesias.

(b) Respiratory System (R. S.).—Respiratory neurasthenia, as bronchial asthma, hay fever and increased number of respirations.

(c) Cardiovascular System (C. V. S.).—Circulatory neurasthenia, as palpitation, blushing, angio-neurotic edema, vascular throbbing, fainting, urticaria and purpura.

(d) Digestive System (D. S.).—Gastrointestinal neurasthenia, as nervous dyspepsia and nervous diarrhea.

(e) Glandular System (G. S.)—Eliminative neurasthenia, as polyuria, hyperidrosis, hyperthyroidism (exophthalmic goiter), salivation and seminal emissions.

(f) Articulo-Osseous System (O. S.).—Articulo osseous neurasthenia, as hysterical joints and creaking vertebræ.

(g) Muscular System (M. S.).—Muscular neurasthenia, as twitching, trembling, chills, chattering, sleep-starting, pains, cramps, lassitude and weakness.

Western Medical Review, Omaha.

September.

68 *Anteflexion of the Uterus. H. M. Hepperlen, Beatrice, Neb.
69 *Defective Diagnosis in Diseases of Children. H. W. Orr, Lincoln.
70 *Graves' Disease Treated with Diphtheria Antitoxin. W. F. Milroy, Omaha.
71 The Climate of Custer County. W. R. Young, Ansley, Neb.
72 Doctors. J. L. Sutherland, Grand Island, Neb.
73 Hemorrhage. F. E. Walker, Hot Springs, S. D.

68, 69. Abstracted in THE JOURNAL, June 8, 1907, page 1982.

70. **Diphtheria Antitoxin in Graves' Disease.**—Milroy reports a case of Graves' disease, of a serious character, sequent on a miscarriage. The patient had had an enlargement of the thyroid for many years. It was slight and had not increased for a long time. An attack of dyspnea, with exceedingly rapid pulse and slight exophthalmos, coupled with some increase in the size of the gland, brought her under observation. The disease progressed rapidly, serious interference with nutrition ensued, and she became emaciated. Three thousand units of diphtheria antitoxin were given. Within half an hour after receiving the injection she called for food and ate with apparent relish, retaining the food; the diarrhea ceased at once. Five days later, the antitoxin was repeated, and again, about four weeks subsequently, because of the recurrence in a mild form of the gastrointestinal symptoms. From the first administration, the patient began to improve steadily, she gained weight and her strength increased though the exophthalmos became more pronounced. Life was made endurable, but the patient was still an invalid. About four months after this, a portion of the thyroid was removed. At the time of writing, although the exophthalmos was still considerable, but not so great as to cause annoyance save by its appearance, the patient stated that she felt better than ever before in her life.

Wisconsin Medical Journal, Milwaukee.

August.

74 Recent Advances in the Study of Heart Disease. G. Dock, Ann Arbor.
75 Tracheotomy in Emergencies. M. Iverson, Stoughton, Wis.
76 *Contract Practice. W. F. Zierath, Sheboygan.

September.

77 *Hemorrhage and Transfusion. G. Crile, Cleveland, Ohio.
78 *Annual Address of the President of the State Medical Society of Wisconsin. L. H. Pelton, Waupaca, Wis.
79 Recent Sanitary Legislation in Wisconsin. C. A. Harper, Madison.
80 *Modern Theories of Digestion. H. C. Bradley, Madison.
81 *Depletion of Metritis and Epididymitis by the Use of Magnesium Sulphate. C. J. Wallace, Chippewa Falls, Wis.

76. Abstracted in THE JOURNAL Sept. 28, 1907, page 1134.

77. Abstracted in THE JOURNAL, Aug. 31, 1907, page 796.

78. Abstracted in THE JOURNAL, Aug. 31, 1907, page 793.

80. **Digestion.**—Bradley gives a picture of the alimentary tract in action about as it was conceived by the older physiologists, and as it has been taught, even up to the present day. Our modern views depart from this conception in a number of important respects. Cannon has shown that there is far

less general movement of the contents of the stomach, after a full meal, than was formerly supposed. Volhard's discovery of a new gastric enzyme, gastric lipase, is another addition to our knowledge. Laquer found this substance active enough to convert a large part of the emulsified fat into fatty acids and glycerin. The discovery of this fat-digesting enzyme is of increased significance in the preparation of food for assimilation. The chief differences between our view of pancreatic digestion and that of a decade ago center around the discovery of enterokinase, by Schepowalnikow, and of secreting by Starling. A minute amount of enterokinase will render active a relatively large amount of trypsinogen, leading to the formation of trypsin, which is absent in pure pancreatic juice fresh from the duct of Wirsung. Secretin, discovered by Bayliss and Starling in the mucosa of the duodenum, seems to have the function of stimulating pancreatic secretion. The discovery of the enzyme eripsen, by Cohnheim, in 1901, has helped to account for some of the anomalies of proteid digestion and absorption. Its combined action with that of trypsin reduces a soluble proteid to its cleavage products in a time more closely resembling the speed of digestion in the body than is possible with trypsin alone. The admission of a breaking down to the fundamental units of structure during the process of digestion makes it apparent how a dog can build up typical dog proteid, a fowl its characteristic tissues, a man, his, from the identical diet. We can understand, too, why dog or human serum remains uniform in composition, no matter what the diet. We have simply to assume the two propositions of complete cleavage and re-synthesis, to put the whole question of proteid absorption on a reasonable basis. The work of Abderhelden and his pupils, from another standpoint, presents absolute evidence of proteid synthesis. Recent work by Kauffmann and by Wilcox and Hopkins bears indirectly on another phase of this same question, viz., that there is much evidence to show that proteids are made in the animal organism from the deep-seated cleavage products of proteid digestion. In conclusion, the author calls attention to the fact that the intestine exercises an excretory function as well as an absorptive one, more particularly in the case of metallic salts.

81. **Magnesium Sulphate in Metritis and Epididymitis.**—In cases of metritis (endometritis) and epididymitis, Wallace speaks highly of the use of magnesium salts in concentrated form, and reports two cases in support of his opinion.

Colorado Medicine, Denver.

August.

82 Physiologic Influence of Lowered Barometric Pressure. H. Sewall, Denver.
83 Experimental Stomach Surgery. A. R. Pollock, Antonito, Colo.
84 Ectopic Gestation. T. A. Stoddard, Pueblo, Colo.
85 Peritoneal Drainage. D. P. Mayhem, Colorado Springs.
86 The Swing of the Pendulum or the Renaissance of Internal Medicine. T. B. Moore, Canon City, Colo.

Journal of the South Carolina Medical Association, Greenville.

August.

87 Effect of Eyestrain on the General Health. C. W. Kollock, Charleston S. C.
88 Summary of Obstetric Progress. E. A. Hines, Seneca, S. C.
89 Malarial Fevers. J. K. Fairey, St. Matthews, S. C.
90 Postmortem Examinations. E. O. Jenkins, Troy, S. C.
91 Gangrenous Scrotum. W. P. Timmerman, Batesburg, S. C.

Northwest Medicine, Seattle.

September.

92 Therapeutics of Veronal. W. House, Portland.
93 Tonsillitis. C. L. Holt, Bellingham, Wash.
94 Use of Hyoscin-Morphin-Cactin Tablets. J. Benson, Colfax, Wash.
95 Recumbency in the Treatment of Infantile Paralysis. A. B. Judson, New York.

Texas State Journal of Medicine, Fort Worth.

September.

96 Personal Responsibility in Combating Tuberculosis. W. Porter, St. Louis, Mo.
97 Climate of New Mexico. P. M. Carrington, Fort Stanton, N. M.
98 Case of Cholecystenterostomy. J. T. Moore, Galveston.
99 Examination of Eyes and Ears of School Children. R. E. Moss, San Antonio.
100 Importance of Early Diagnosis and Treatment in Strabismus. R. H. T. Mann, Texarkana, Tex.
101 Appendectomy. H. K. Leake, Dallas, Tex.

American Practitioner and News, Louisville.

September.

102 Postpartum Hemorrhage and Its Management. W. B. Gossett, Louisville.
103 Synopsis of Medical Science. S. F. Brothers, Brooklyn.
104 Acute Hematemesis. G. A. Hendon, Louisville.
105 Cases of Gunshot Wound of Arm and Stab Wound of Abdomen. J. B. Lukins, Louisville.

Buffalo Medical Journal.

September.

106 Our Academy. C. S. Jewett, Buffalo.
107 Physical Defects in Children and Their Effect on Development. F. W. Bock, Rochester, N. Y.

The Medical Standard, Chicago.

September.

108 The Surgical Prostate. (Part II.) F. A. Leusman, Chicago.
109 The Larger Physician. W. S. Smith, Baltimore.
110 Comparison of the Effects of Psoas Trauma on Viscera in the Right and Left Iliac Fossa. B. Robinson, Chicago.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

September 14.

1 Empirical and Experimental Methods in Medicine. R. M. Simon.
2 *Treatment of Sleeping Sickness and Other Trypanosomiases by the Atoxyl and Mercury Method. R. Boyce.
3 Two Cases of Poisoning by Weed Killer. W. A. Aldred.
4 Case of Myelopathic Albumosuria. W. L. Brown.
5 Eyesight of the Poorer City Children. H. W. Thomson.
6 Synergic Movements of the Eyelids and Mouth. W. M. Beaumont.
7 Ionic Medication. S. Leduc.
8 Roentgen Rays in Diagnosis. J. M. Davidson.
9 Roentgen Rays in Examination of the Hip. W. H. Shenton.
10 Measurement of Pelvic Diameters by the Roentgen Rays. J. R. Riddell.
11 System of Radiography. W. I. Bruce.
12 Use of Roentgen Rays in Treatment. J. H. Sequeira.
13 New Meter for Measuring the Dose of Roentgen Rays. A. H. Pirie.
14 *A Method of Treating Lupus Vulgaris. J. G. Tomkinson.
15 Case of Paget's Disease Treated by Roentgen Rays. J. Taylor.
16 Statistics of Roentgen Ray Treatment in Rodent Ulcer and Carcinoma. J. D. Harris.
17 Electrotherapeutics and the Action of Electric Currents. K. A. W. Salomonson.
18 Oscillograph Tracings of Medical Coil Currents. H. L. Jones.
19 Therapeutic Value of Alternating Currents of Low Frequency. E. R. Morton.
20 Rationale of Static Currents. F. H. Humphris.
21 Influence of High-Frequency Currents on the Urinary System. W. F. Somerville.
22 Electrodiagnosis of Oculomotor Paralysis. K. A. W. Salomonson.
23 *Uses of the Cryptoscope in Operatons for Renal Calculi. A. D. Reid.
24 The Orthodiagraph. H. Walsham and J. F. H. Daily.
25 Use of Roentgen Rays from the Point of View of the General Practitioner. E. Pearson.
26 *Co-ordination of the Public Medical Services. A. Newsholme.
27 Necessity of Increasing the Degree of Immunity Against Smallpox. A. W. Gilchrist.
28 The New Vaccination Order. T. G. Horder.
29 *Infant Mortality and the Milk Supply. H. Kenwood.
30 *Id. E. W. Routley.
31 *Economical Purification of Sewage in Rural Districts. T. A. Starkey.
32 *Prevention of Postmortem Putrefaction. C. McWalter.

2. **Treatment of Sleeping Sickness.**—Boyce gives a connected account of the important studies in experimental therapeutics by various investigators connected with the Liverpool School of Tropical Medicine, on the treatment of sleeping sickness, and other forms of trypanosomiasis. The present method adopted by workers of the Liverpool school consists in treating infected animals from which the tryanosomes have been primarily driven out of the blood by the use of atoxyl, by a second drug. Experiment with the salts of the different heavy metals showed distinct beneficial results, when mercury bichlorid was used as a second drug. The underlying principle is that different drugs are required, when an infective organism such as a protozoan shows two distinct phases in its life history. This principle is an advance in experimental therapeutics that may soon find application in diseases nearer home.

14. **Method of Treating Lupus Vulgaris.**—Tomkinson's method is as follows: Crusts are removed by a salicylated ointment. A tentative *x*-ray exposure of from three to five minutes is made on a small area of the lesion. In a few days the *x*-rays are employed for about five minutes daily on a somewhat wider area of the lesion, unless contraindicated, until the whole lesion has been gone over three or four times. It is then plastered with Unna's 50 per cent. salicylic acid and creosote *Pflastermulle*, which is renewed daily. If this is

badly borne, the part is previously swabbed with 10 to 20 per cent. solution of cocain. In approximately ten days much of the tuberculous tissue will have come away. The lesion is then swabbed with cocain solution, dried and painted with the following preparation (well agitated before application, as there is a considerable sediment):

℞. Acidi carbolici .....50 per cent.
Acidi lactici .....15 per cent.
Acidi salicylici .....15 per cent.
Alcohol abs. .....20 per cent.

After a few minutes the lesion is painted with the following solution:

℞. Acidi carbolici .....80 per cent.
Alcohol abs. .....20 per cent. (Billet.)

(The formula employed in Billet's phenol treatment.)

In very extensive cases a part only of the lesion is cauterized, the remainder being cauterized on one or more subsequent occasions. After cauterization the part is dressed for a day or two with sterilized lint and carbolic oil (1-30) and thereafter with a 20 per cent. aqueous solution of ichthyol until healing—usually relatively rapid—has taken place. In some instances the application of the ichthyol solution is deferred until the lesion has been replastered and recauterized perhaps three or four times. After healing in the manner just described—which may be accelerated by bathing the part at the time of dressing with a little of the ichthyol solution, to which 25 per cent. to 50 per cent. of methylated spirit has been added (cocain swabbing is indicated)—*x*-ray treatment is recommended, short exposures of from three to five minutes—rarely longer—being made. At the end of three or four months the treatment is discontinued for a considerable time, the patient occasionally returning for inspection. At the end of some months the patient is submitted to a second course of treatment, which is repeated after another interval if necessary. During the cessation of the more vigorous treatment the patient is sometimes instructed to use a mercurial ointment or lotion. It is usual, prior to the dressing of the lesion, to clean it up with a solution of mercury perchlorid (1 to 500).

23. **Cryptoscope.**—Reid thus describes this instrument and its use: The cryptoscope used consists of an aluminum cup, 3½ inches in diameter, at the bottom of which is placed the fluorescent screen, which is kept in position by a wire spring. The bottom of the cup being of aluminum is transparent to the rays. Over this cup a cylinder of aluminum slides with some friction. This bears at its upper end two tubular eyepieces, and the arrangement of the cup and cylinder is such that the screen can be adjusted at a suitable distance from the eye of the individual operator. The screen is completely embedded in celluloid, and the whole apparatus consists of three pieces, all of which can be completely sterilized. The kidney is exposed in the ordinary way and brought out to the loin. The tissues around the kidney are then pressed down from the organ by means of a special retractor, which is also made of aluminum. This consists of a tapered plate of aluminum, the center of which is bent into the form of a semicircle. In the central portion a hole is made of sufficient size to allow the kidney to pass through it, and the retraction is made by an assistant pressing down the extremities. Before the operation is commenced, the tube is adjusted, so that it can readily be brought opposite the exposed kidney. When the organ has been delivered, the retractor is placed in position and the kidney examined directly by the cryptoscope. It is then possible to see the smallest fragment of calculus in the kidney and accurately to localize its position, and it is a matter of comparative simplicity to make a small incision over each calculus and to remove it.

26.—Abstracted in The Journal, Sept. 14, 1907, page 972.

29. **Infant Mortality and the Milk Supply.**—Kenwood points out that the milk trade is unique among trades, and an exceptionally difficult one to conduct, inasmuch as it deals with a necessary article of food, which forms the almost exclusive diet of a large proportion of the most susceptible units of the population (infants and invalids). Milk is also unique in its power of collecting and fostering micro-organisms, which are injurious to health and may be fatal to the infant consumer. At the average country dairy farm lies the greatest difficulty. The author scores rural sanitary authorities for ignoring the legal powers possessed by them; they should be compelled to carry out proper sanitary regulations. Kenwood advocates the licensing of all premises, where milk is sold or collected, prepared for the purpose of sale, also veterinary inspection of milch cows. Kenwood thinks that while some danger exists in the use of sterilized milk, its danger is exaggerated. He asserts that there is practically no evidence that pasteurized milk has caused infantile scurvy.

30. **Id.**—Routley draws a most instructing object lesson with regard to infant mortality, from the unique population conditions of the urban sanitary district of Aldershot. This is divided into two parts, military and civil, viz., the camp 15,000 and the town 19,000. These are separated from each other by a well-defined line of demarcation. There are, however, a greater number of young married people in the camp population as compared with the town, so that the number of births in the population is approximately equal. The social class of the mass of the population is similar in both cases, the inhabitants of the town belonging mainly to the working classes, from which the greater part of the army strength also is drawn. Routley has compared the infantile mortality statistics, due to diarrheal diseases for each district, and each year, from 1902 to 1906. They are as follows:

Year.	19,000 town.	15,000 camp.
1902	4	1
1903	7	2
1904	11	0
1905	10	1
1906	50	13
	62	17

A comparison of the same diseases, occurring in children under the age of 5 years for the same period gives a total for the town of 76 deaths against 23 deaths for the camp, or approximately a similar proportion. During the same period, the births were in the proportion of 4 to 3, namely, 2,800 in the town and 2,092 in the camp. The original source of the milk supply is common to both districts, the milk venders in the town supplying both districts. Nine-tenths of the milk supplied to the whole district comes long distances by rail. Wherein, then, lies the distinction between the two classes of population, and how is the remarkable difference in the incidence and fatality of epidemic diarrhea to be accounted for? With almost the same number of births, with a history of artificial feeding in the same proportion (85 per cent.) of fatal cases, and among the same class of population, the number of infant deaths from diarrheal diseases is enormously greater in the civilian than in the military population. The source of the milk and the intervening period between the time of milking and of delivery being the same in both cases, the cause must necessarily be sought in the household, and it unquestionably can be found there. In the military camp, cleanliness is compulsory and is conspicuous in married quarters; the apartments are comfortable and periodically cleansed; overcrowding is entirely absent. The reverse is the case among the dwellers in the town district, where many frequently inhabit a single room in which uncleanliness, dislike of open windows and swarms of house flies are prevalent. Milk is kept in dirty vessels, and allowed to stand uncovered in dirty rooms. Routley considers that the supposed evils of the farmyard are frequently much exaggerated and will be lessened by more thorough supervision, and with regard to the prevalence of diarrheal diseases, he is strongly impressed with the belief that the farm contamination of milk has little or nothing to do with their causation, and that it is in the home and in the home only that the milk is infected with the disease-producing micro-organisms.

31. **Sewage Purification.**—Starkey considers the various methods of sewage purification advocated for use in rural districts, with their advantages and disadvantages, and describes a method which he has put in practice many times with great success. It is a combination of a simple septic tank, with intermittent downward filtration worked on the subsoil irrigation plan. He constructs a concrete or cement-lined brick tank, covered in, capable of holding the sewage flowing during a period of twenty-four or thirty-six hours. The sewage, after

passing through this tank, is then sent off in given quantities at stated intervals by means of an automatic flushing arrangement, something after the pattern of a Roger Field flush tank, into a series of agricultural tile drains, 2 or 4 inches in diameter, laid almost on the level, with the points left open about half an inch, and not deeper than 6 inches or so beneath the surface of the ground. Under draining may or may not be required, depending on the nature of the subsoil and the trend of the underground water, the under drains being laid from three feet six inches to five feet deep. The total amount of sewage during twenty-four or thirty-six hours is ascertained and divided into eight or twelve charges or flushes; the length of agricultural drain pipe necessary is that which will accommodate the amount of one of these flushes when each drain pipe is supposed to be full. The ground thus receives a dose of well aërated tank effluent at three hourly intervals. Suitable land is grass land, orchard or garden. The system is suited to all climates.

32. **Prevention of Postmortem Putrefaction.**—Since the prejudice is still strong against cremation and since the cost of embalming prevents it from becoming generally applicable, McWalter suggests a method of converting the cadaver into ammonia, ashes and carbonic acid, without the production of offensive by-products, harmful to the public health by poisoning the water supply. The method is simply that of injection with formalin, introduced by syringing into the aorta in the ordinary way. It can be done neatly with little practice and without that mutilation that is so abhorrent to the relatives of the deceased. It is cleanly, cheap and effective.

The Lancet, London.

September 14.

33 *Co-ordination of Postmortem Work and Clinical Observation. E. F. Trevelyan.
34 *Inhalation. A. Foxwell.
35 *Statistical Study of the Polymastia of the Japanese. T. Iwai.
36 *Spontaneous Aneurism of Popliteal Artery Treated by Extirpation. H. A. Lediard.
37 *Actinomycosis of the Appendix. A. R. Short.
38 Acute Tuberculous Cerebrospinal Meningitis. T. S. Wilson and J. Miller.
39 Observations from the Soudan. L. Bousfield.
40 Irregularity of the Pulse in Diphtheria. O. H. Peters.
41 Results in Appendicitis Treated by the Immediate and Complete Operation. W. G. Spencer.
42 *Twisted Ovarian Pedicle in Child of Three Years. W. G. Sutcliffe.

33. **Co-ordination of Postmortem and Clinical Work.**—Trevelyan holds that at a time when the great advances in science have made it necessary that the teachers of pathology in our medical schools should give their whole time and attention to the subject, it becomes of greater importance than ever that the clinical element should be kept constantly in view in the postmortem room. Naked eye morbid anatomy can be learned from the pathologic specimens in the museum, but the correlation of morbid anatomy with clinical work can only be satisfactorily learned in the postmortem room where the whole clinical and pathologic aspect of disease can be co-ordinated. So strongly does he feel this, that he declines to make a postmortem examination when clinical notes are not available, looking on it as waste of time. The following is his method of procedure in postmortem work: An abstract of the clinical report, written on the postmortem room blackboard, is read out and the morbid changes which it is expected to find are outlined before the autopsy is begun. The actual morbid changes are then demonstrated, with comments on the pathologic findings. Finally, the symptoms are compared step by step with the pathologic changes present, the clinical diagnosis made during life being assumed to be the best that could be made, to allow of the freest possible discussion. He reports eight cases dealt with in this way.

34. **Inhalation.**—Foxwell discusses at length the uses of inhalation in diseases of the respiratory passages, and describes the methods in use at Marlioz, Allevard and Brompton. He points out that as the inhalation bathes an excreting, not an absorbing surface, we can not suppose that its action can continue for long after the inhalation has stopped. When he prescribes an inhalation he tries to have it used for three hours daily. If he fails to get a promise of one hour daily at least, he drops it for some other method of treatment. The general skepticism in regard to the influence of inhalation on diseased conditions of the alveoli or fine bronchioles he considers due to want of thoroughness in carrying out the treatment. In the case of gases, diffusion will carry it there. In the case of fluids how far it penetrates will depend on the weight and volatility of the drug. He calculates that the percentage of active medicament that enters the alveoli can not be more than one-fiftieth of that entering the mouth. He believes that inhalation properly employed is a powerful therapeutic measure, but its power resides not in the percentage strength of the inhalation, but in the vast quantity of it inhaled, that is, in the long duration of its employment.

35. **Polymastia in the Japanese.**—Iwai considers the prevalence of supernumerary mammary glands among the Japanese. It differs from the condition as observed among Westerners in being usually found above the normal breasts, but resembles it in occurring much more frequently in females and more frequently on the left side than on the right. Six is the largest number of glands found. The condition is certainly inherited and chiefly through the mother.

36. **Extirpation of a Popliteal Aneurism.**—Lediard operated by a six-inch incision over the popliteal space, dissecting out the artery above and below the aneurism and dividing it between double ligatures. It was then dissected away without difficulty, except where the sac was adherent to the popliteal vein. Finally, the vein was divided. Cramp in the calf and a burning feeling in the foot followed, but disappeared in a few days. In a little over three months the patient was able to kneel slowly without pain and to walk with only a slight limp. About four months later he was able to walk three or four miles without trouble and without a stick, and was engaged as a gardener. Lediard considers the question of extirpation of aneurisms generally, and thinks that there is good reason for having recourse to extirpation in all aneurisms in accessible positions.

37. **Actinomycosis of the Appendix.**—Short records five cases, and discusses the etiology, pathology, symptoms, diagnosis, prognosis and treatment of the condition. The probable total number of known cases is 150. Five males to two females are affected, young children escape, many sufferers are connected with farm life or deal with corn. Husks and thorns have been the apparent infection carriers in some cases; spread takes place by continuity and by vascular metastases. The diagnosis before perforation can be made only by finding actinomycetes in the stools. The affection may resemble tuberculous or malignant diseases of the cecum, but in actinomycosis the mass is larger, more fixed, and there are no obstructive symptoms. It may also be confounded with psoas abscess. The prognosis is much less favorable than is usually admitted. Having regard to the very grave outlook, a determined attempt should be made completely to remove all foci of the infection, if seen early enough, even to the extent of sacrificing the cecum and neighboring bowel, perhaps with temporary formation of an artificial anus. Potassium iodid in large doses and washing out the wounds with diluted tincture of iodin are recommended. Arsenic and calomel and injections of tuberculin have also been recommended.

42. **Twisted Ovarian Pedicle in a Child.**—Sutcliffe reports the case of a child 3 years old, attacked by violent abdominal pains and vomiting. On opening the abdomen an ovarian tumor was found and removed. The pedicle, which sprang from the right broad ligament, was found twisted four times. The child made an excellent recovery.

Medical Press and Circular, London.

September 4.

43 Abortive Forms of Tabes. F. Raymond.
44 *Use of Calcium Salts. S. J. Ross.
45 Definition of Blindness in Children. A. Bronner.
46 Chronic Suppurative Disease of the Middle Ear. E. M. Stockdale.
47 Physiologic Sins and a Health Conscience. J. C. McWalter.

44. **Calcium Salts.**—Ross lauds the value of calcium chlorid in chilblains, 10 grains thrice daily in a tumblerful of water; in ulcers of the leg, the iodid, 3 grains thrice daily; in epistaxis, the chlorid, 15 grains twice; in painless edema of the ankles, the chlorid, 15 grains thrice daily for three days. In

a syphilitic perforation of the hard palate, under the iodid, 3 grains thrice daily for two months, the perforation healed. In menorrhagia, with epistaxis and erythema nodosum, the chlorid 15 grains thrice daily, has been beneficial; in pneumonia with hemoptysis, the iodid 3 grains thrice daily for three days gave good results. If nausea occurs, he advises increasing the dilution of the drug.

Clinical Journal, London.

August 28.

48 Cases of Paralysis of Muscular Atrophy. J. A. Ormerod.
49 Features of Adherent Pericardium. T. Fisher.

British Journal of Children's Diseases, London.

August.

50 *Acute Rheumatism in Childhood. C. O. Hawthorne.
51 *Relapses in Diphtheria. J. D. Rolleston.
52 *Rational Treatment of Adenoids. M. Yearsley.

50. **Acute Rheumatism in Children.**—Hawthorne refers to the remarkable recognition of fever in childhood that has distinguished professional opinion in recent years, and also to the conspicuous difference in the picture of acute rheumatism in the child, as compared with the adult. The escape of the joints in early life, and the association of chorea as a rheumatic event are noted. There is no absolute and admitted criterion by which diagnosis can be assured in the individual case. The greater prevalence of heart disease with the rheumatism of childhood he believes to be partly explained by the relative escape of the joints permitting the child to continue long after the painful polyarthritis of the adult has enforced complete rest. He urges the profession to impress on the guardians of children the need for complete rest, to obviate organic cardiac trouble. He emphasizes the following facts: The occasional development of a relatively severe inflammatory attack, limited to a single joint, and the restriction of evidences of inflammation—pain, tenderness and redness—to the joints of the fingers and toes, may both be regarded as a guarantee of cardiac valvular disease. His own experience prompts him to the use of salicin in moderate doses; also of the organic salts of potassium or sodium, pushed to make the urine alkaline, and combined with quinin, two grains in doses, especially when temperature is subfebrile and pains are vague and generalized. He finds himself unable to come to any positive conclusion regarding the relation of enlarged tonsils and adenoids to rheumatic infection.

51 **Relapses in Diphtheria.**—Rolleston arrives at the following conclusions: 1. Relapses occur in a little more than 1 per cent. of all cases of diphtheria. 2. They are less frequent than late tonsillitis in convalescence from diphtheria. 3. They do not occur before the third week. 4. The frequency of serum rashes after re-injection is much greater, their appearance is earlier and their phenomena are more intense than usual. 5. Relapses must be distinguished from angina redux, scarlet fever and late tonsillitis. 6. They are usually milder than the primary attack. 7. Comparatively small doses of antitoxin should be employed in the treatment of relapses. 8. The causation of relapses is obscure.

52. **Removal of Adenoids.**—Yearsley deprecates unskilled operations. No surgeon should consider himself qualified to remove adenoids until he can bring away the whole mass in one sweep. Adenoids sometimes recur, but Yearsley's chief experience is that the recurrence of adenoids is merely another term for imperfect removal.

Presse Médicale, Paris.

September 4, XV, No. 71, pp. 561-568.

53 Technic of Bronchoesophagoscopy. Guisez.
54 *Test Ration and Urinary Elimination. (Régime d'épreuve et eliminations urinaires.) M. Labbé and H. Labb.
55 Radium Treatment of Superficial Epithelioma. L. Wickham and Degrais.
56 Hammer Toe. (Orteil en marteau.) A. Broca.

September 7, No. 72, pp. 569-576.

57 Opsonins and Treatment of Infectious Diseases. C. Levaditi.
58 *Hygroma of the Knee. (Hygroma prerotulien.) A. Broca.
59 Inflammation of Meckel's Diverticulum in a Hernia. (Diverticulite herniaire.) L. Morel.
60 Hill Climbing in Treatment of Pulmonary Tuberculosis. (Cure de terrain.) C. Mantoux.

54. **Test Ration.**—Labbé and Labb have outlined a test mixed menu which they insist must be followed for three days when they wish to study elimination in the urine. The third day the total output of urine is collected and examined. They find this test ration, as they call it, a great help in comparative study of the metabolism. The articles of food are cooked entirely without salt, and the patient is given 12 gm. of salt which he can use at will during the day, only he must consume it all. The diversified diet is composed about equally of meat and vegetables, a total of 80 gm. of albumin. The particulars are given in detail. The tabulated findings show a constant physiologic average of elimination in health, with characteristic curves in various affections.

58. **Hygroma of the Knee.**—Broca evacuates a hygroma of the knee with an incision on each side instead of in the middle, passing a drain tube horizontally through them. This prevents any possible trouble from the scar later in kneeling.

Revue de Gynécologie, Paris.

XI, No. 3, pp. 385-576. Last indexed, June 8, p. 1191.

61 Development of Urethra, Vagina and Hymen. E. Retterer.
62 *Shape of the Labia Minora in the Adult. (Forme des petites lèvres.) F. Jayle.
63 Anatomic Study of Segment Above Intestinal Stenoses. P. Cavaillon and G. Leclerc.

62. This article was summarized in The Journal, Sept. 14, 1907, page 973. It is profusely illustrated.

Semaine Médicale, Paris.

September 11, XXVII, No. 37, pp. 433-444.

64 *Laboratory Diagnosis of Typhoid Fever. (Valeur des méthodes de lab. dans le diagnostic de la fièvre typhoide.) L. Blum.

64. **Laboratory Methods in Diagnosis of Typhoid Fever.**—Blum's experience at Strasburg has been decidedly favorable with "hemoculture," as he calls the bacteriologic test of the blood, in a larger proportion of cases and at an earlier period than with any other diagnostic measure. The diazo reaction is useful in that it suggests the possibility of typhoid fever. He asserts that when the number of leucocytes is below normal this suggests typhoid and has a decisive importance when associated with an increase in the number of mononuclears. This sign is epecially important for differentiation of relapses of typhoid fever from other secondary complications. Negative findings with one or several of these tests, however, do not exclude the possibility of typhoid infection. Tests of the bactericidal power of the serum, however, will sometimes decide the question.

Archiv f. klinische Chirurgie, Berlin.

LXXXIII, No. 2, pp. 341-660. Last indexed, October 5, p. 1229.

65 *Purulent and Ulcerative Proctitis. E. Ruge.
66 Ideal Operation for Arterial and Arteriovenous Aneurism. E. Lexer.
67 Incarcerated Hernia Complicated by Thrombosis of Superior Mesenteric Vein. R. v. Baracz.
68 Transplantation of Organs by Suturing Vessels. R. Stich.
69 *Pulmonary Complications After Ether Anesthesia. (Lungencomplicationen nach Aethernarkosen.) Offergeld..
70 *Applicability of Underpressure Method to Surgery of the Heart. (Unterdruckverfahren bei Herzchirurgie.)) F. Sauerbruch.
71 Treatment of Subcutaneous Injuries of Kidneys. (Nierenverletzungen.) A. Frank.
72 Needle Left in Coat Driven into Right Ventricle and Auricle. Suture. Recovery. (Nadelstichverletzung des rechten Herzventrikels und Vorhofs.) Thiemann.
73 Technic of Uranoplastics. L. Moszkowicz.
74 Development of Surgery of Lungs. (Lungenchirurgie.) T. Gluck.
75 *Acute Yellow Atrophy of Liver Following Chloroform Anesthesia. (Acute gelbe Leberatrophie, etc) N. Guleke.
76 Diverticula and Circular Cicatrices in Esophagus. (Div. und circ. Narben der Speiseröhre.) Küster.
77 Chronic, Encapsulated Fibrous Peritonitis. P. J. Owtschinnikow.
78 First Successful Resection of Carcinoma of Cardia through the Thorax. (Endothorakale Oesophaguschirurgie.) W. Wendel.
79 *Case of Tuberculous Coxa Vara. R. Bally.
80 Lifting Appliance for Abdominal Surgery (Einfacher Hebeapparat.) Schultze.

65. **Purulent and Ulcerative Proctitis.**—Ruge states that medical treatment alone can be successful only when there are no well-developed ulcers. Even when supplemented by colostomy, a cure is seldom effected except in case of extensive flat ulcerations, but the general condition is much improved. Ulcerative proctitis plus inflammatory stricture of the rectum is generally of syphilitic origin, but exceptionally may be tuberculous, dysenteric or gonorrheal. Experiences with 75 patients emphasize, he says, the importance of extirpation of the

fected portion of the rectum. Excision of the stricture through a sacral incision is feasible only when the ulcerations are not extensive or deep. Nineteen out of 52 patients, nearly 30 per cent., have been cured for more than a year since operative treatment, and 18 are known to be continent to date. In 24 cases no operation was attempted, the patients either succumbing at once or refusing the advised operation or improving under medical treatment. In the latter group one patient with ulcerative proctitis and gonorrheal ulcers in the vagina was cured by the actual cautery, insufflation of iodoform and daily rinsing of the rectum with a 1 to 1,000 silver nitrate solution. Another patient with ulcerative proctitis and syphilitic stricture improved materially under astringent applications, passage of sounds and mercurial salve. Other patients with proctitis and colitis, but no ulceration, were cured by rinsing with silver nitrate and tannin. The ulcerations and stricture in other patients with gonorrheal complications were cauterized with zinc chlorid and silver nitrate with great benefit. The last patient in this group was a man with ulcerative proctitis and colitis, no stricture. Treatment included Dover's powder, irrigation with a suspension of bismuth and a solution of silver nitrate alternating with another silver preparation. The contemplated operation was postponed on account of the improvement in the course of two months. The irrigations were continued for some time at longer intervals, and the rectal mucosa by the end of the year was soft and apparently normal. The cases were all in Körte's surgical service at Berlin. Twenty-seven of the 75 patients succumbed to some complication soon after their entrance. Of the remaining 58, 29 were dismissed cured, 20 materially improved and only 8 were not benefited. Recurrence has been observed in 3 cases, and one patient succumbed to insufficiency of the suture after extirpation of the rectum.

69. **Pulmonary Complications After General Anesthesia.**—Offergeld's experimental research on the action of general anesthesia on the lungs of large laboratory animals showed that the ether drop method is free from the by-effects observed with all others. The fatty degeneration of the epithelium of the alveoli observed constantly with the ether-oxygen method was never discovered after the drop method. He further studied the effect of repeated ether anesthesia on the lungs and the regenerative processes. His research confirms the superiority of the drop technic and seems to show that the lung tissue bears ordinary air better than an excess of oxygen.

70. **Underpressure Method in Surgery of the Heart.**—Sauerbruch relates experiences with his air cabinet in experimental surgery of the heart and states that temporary occlusion of the afferent veins is practicable, in operating on the heart, and much reduces the danger and difficulty of the work, especially when suturing the right heart after a stab wound. He gives an illustration of the best way to grasp the heart to induce temporary kinking of the cava.

75. **Acute Yellow Atrophy in Consequence of Chloroform Anesthesia.**—Guleke's patient was a robust young woman on whom a herniotomy, lasting half an hour, was performed under 25 cc. of chloroform. The anesthesia was unusually smooth; hernial sac contained only omentum. Jaundice and cholemia developed in less than 24 hours, and at the end of 92 the patient died in coma after delirium and convulsions. The microscope revealed extreme destruction and fatty degeneration of the cells in the liver and in the convoluted tubules in the kidneys. The chloroform was evidently responsible for the trouble, as infection and thrombosis could be excluded. The same chloroform, used for other patients the same day, caused no by-effects in other cases. All the similar cases of yellow atrophy of the liver on record, following administration of chloroform terminated fatally in from three to six days. The patients were generally young and robust. It is noticeable that the operations had always been abdominal and that the patients were moderately or extremely fat. Other facts are cited which suggest that an unusually fat liver is less resistant to chlorform than one less so.

79. **Tuberculous Coxa Vara.**—Bally's patient, a child of three, recovered completely in two months after resection of the tuberculous tissue. The neck of the femur was the seat of a tuberculous osteomyelitis. Helbing has recently reported four similar cases, all the children were between the ages of 4 and 14.

Archiv f. Verdauungs-Krankheiten, Boas', Berlin.

XIII, No. 4, pp. 329-461. Last indexed July 6, p. 92.

81 •Importance of Determination of Outline of Stomach on Right Side in Case of Motor Insufficiency. (Bestimmung der rechten Magengrenze.) A. v. Sievert.
82 Favorable Experiences with Sahli's Desmoid Test. (Desmoidreaktion.) T. J. Hellman.
83 •Choleriform Poisoning from Fresh Haddock. (Ichthyismus choleriformis.) O. Roepke.
84 Palpation of Normal Stomach. (Tasten normaler Magentelle.) T. Hausmann.
85 Transient Stenosis of Pylorus and Transient Stagnation of Stomach Contents in General. (Vorübergehende Pylorusverengerung und Stauung der Ingesta im Magen.) W. Robin.

81. **Outline of Right Side of Stomach, in Connection with Motor Insufficiency.**—Sievert has been studying the outline of the stomach after artificial inflation. The stomach extends toward the right abnormally far when the motor function is impaired, this extension of the outline toward the right occurring more frequently and more constantly than a corresponding lowering of the lower margin of the stomach. The enlargement of the stomach toward the right is sometimes observed in the earliest phase of dilatation of the stomach, when only the region next the pylorus is affected while the rest of the organ has still its normal outlines. In case of normal motor function the right margin of the stomach is about 6 cm. to the right of the median line, never more than 8 cm., while the lower margin is from 2 to 5 cm. above the umbilicus. In 63 per cent. of the cases of impaired motor functioning examined, the distance is about 9 cm., while the lower margin was close to or below the umbilicus. When the lower margin of the stomach was below the umbilicus the right margin was found 9 cm. and more from the median line in 74 per cent. of the cases. In inflating the stomach it is important not to distend it beyond its normal limits. The details of examination of 65 individuals are tabulated for comparison.

83. **Choleriform Poisoning from Fresh Fish.**—Thirty-seven persons out of 114 in an institution showed more or less serious symptoms, after a meal of "fresh" haddock, which had been killed four and a half days previously. The fish was apparently fresh and firm and had been boiled as usual for eight minutes after having been cut in small pieces. The practical lesson which Roepke draws from this experience is that fish should not be held back by dealers or housekeepers until Friday, as is the general custom, but should be delivered as early as possible after the fish are dead, and be cooked at once, without reference to fast days. He extends the ban on oysters during the months without an "R" to include fish in general.

Beiträge zur Klinik der Tuberkulose, Würzburg.

VIII, No. 1, pp. 1-128. Last indexed, August 31, p. 812.

86 Plasma Cells in Tuberculous-Pneumonic Processes. S. M. Jelenska.
87 •Disturbances in Psycho-physical Balance. (Psychophysische Gleichgewichtsstörung nebst Beobachtungen an Phthisikern.) F. Köhler.
88 •Tuberculin Treatment. (Tuberkuloseärzteversammlung.) Id.
89 Form of Tubercle Bacillus Not Demonstrable with the Ziehl Stain. N. A. Michaelides.
90 Form of Tuberculosis Virus Not Stainable by Ziehl's method. H. Much.
91 •Artificially Induced Pneumothorax in Treatment. (Künstlicher Pneumothorax.) K. Lexer.

87. **Disturbance in Psycho-Physical Balance.**—Köhler applies this term to the condition in which the patient's sensations and impressions are out of all proportion to the physical findings, either by an overestimation or lack of appreciation of the true condition. The morbid underestimation of the condition may be due to the direct action of tuberculous toxin, as in a case he describes with constant euphoria and gaiety. It may be a sign of loss of mental balance, or both these sources may be combined. The first category is the most unfavorable as to prognosis. Among the examples of the various forms cited is that of a neurasthenic with incipient tuberculosis who developed severe sciatica. It persisted for weeks unmodified by the most diverse measures, until a painful furuncle developed in the anal region, diverting the patient's attention from his sciatica. As the furuncle healed, he found that his sciatica had vanished. Köhler urges further study of the mental processes during infectious diseases affecting organs other than

the brain. It is possible that the blood contains so much toxin that the brain is altered by it and its functioning more or less modified.

88. **Tuberculin Treatment.**—Köhler states that he wrote to the university medical clinics in Germany and Switzerland to enquire how much use they are making of tuberculin in therapeutics. He received replies from 20; 6 stated that they do not use tuberculin at all; 7 use it only to a limited extent, 6 use it a little, and 1 uses it extensively. None seemed to be enthusiastic over the results obtained with it.

91. **Artificial Pneumotnorax in Treatment of Lung Processes.**—Lexer describes four cases in which pneumothorax was induced by injection of nitrogen, the results encouraging further trials of the method.

Berliner klinische Wochenschrift.

August 5, XLIV, No. 31, pp. 979-1010.

92 The Three Segments of the Uterus and Placenta Prævia. (Dreiteilung des Uterus, etc.) L. Aschoff.
93 *Primary Cancer of Appendix. (Prim. Krebs der App.) D. Grünbaum.
94 *Typical Affection of the Spine—Insufficientia vertebræ. A. Schanz.
95 *Early Diagnosis of Syphilis of Heart. (Syphilis des Herzens.) B. Herzog.
96 Meningococcus Inflammation of Seminal Vesicles. (Spermatocystitis.) L. Pick.

August 12, No. 32, pp. 1011-1034.

97 Experiences in Favor of Small Doses of Opium in Acute Appendicitis. (Ist Opium nützlich oder schädlich bei acuter Perityphlitis?) P. K. Pel.
98 "Fixation of Complement." ("Komplementbindung.") E. Seligmann.
99 Specificity of Amboceptors. H. Eysbroek.
100 Principles Followed in Carlsbad Course for Gallstone Patients. (Grundsätze für den Kurgebrauch Gallensteinkranker in Karlsbad.) F. Fink.
101 *Instrumental Perforation of Non-gravid Uterus. F. Heymann.

August 19, No. 33, pp. 1035-1062.

102 Influence of Metals on Gastric Mucosa. (Einfluss von Metallen auf die Magenschleimhaut.) A. Bickel.
103 Rôle of Hydrochloric Acid in Gastric Digestion. (Rolle der Salzsäure bei der Magenverdauung.) J. Kentzler.
104 Inhibition of Phagocytosis in the Test Tube. (Behinderung der Reagenzglasphagocytose.) E. Weil and K. Tsuda.
105 *Aberrant Nerve Fibers in Facial Paralysis. (Aberrierende Bündel bei Facialislähmung.) R. Lipschitz.

August 26, No. 34, pp. 1063-1098.

106 Sporadic Cerebrospinal Meningitis and Its Differentiation. Hölker.
107 Chronic Blood Affection Accompanied by Jaundice. (Chron. acholurischer Icterus.) E. Benjamin and E. Sluka.
108 Origin of Contractions of Ventricles. (Ursprungsstelle der Ventrikelkontraktionen.) E. Rehfisch.
109 Behavior of Complements in Dialysis. E. Brand.
110 *The Dorsal Foot Reflex. (Fussrückenreflex.) O. B. Meyer.
111 Congestive Conditions in Female Sexual Organs and Appendicitis. G. Glücksmann.
112 Functional Vocal Disturbances. (Stimmstörungen.) E. Barth.
113 Latest Views on Mode of Action of Hydrotherapy. A. Laqueur.

September 2, No. 35, pp. 1099-1130.

114 Swimming Test of the Lungs and Its Significance. (Lungenschwimmprobe.) H. Kathe.
115 Wassermann's Syphilis Reaction. L. Michaelis.
116 Failure of Atoxyl in Treatment of Central Optic Nerve Affections of Syphilitic Origin. (Centr. Augennervenleiden luetischen Ursprungs.) O. Waterman.
117 Pulse Pressure Findings with Turgosphygmograph. (Turgotonographische Pulsdruckbestimmung.) F. Fleischer.
118 *Gonorrheal Pyelitis. J. Sellei and H. Unterberg.
119 Prolonged Administration of Digitalis. (Protrahierte Darreichung der Digitalisdrogue.) R. E. Achert.
120 Action of Radium Emanations on Man. Loewenthal.

September 9, No. 36, pp. 1131-1162.

121 Another Successfully Removed Tumor in Spinal Meninges. (Rückenmarkshautgeschwulst.) H. Oppenheim and M. Borchardt.
122 Tuberculosis Antibodies and Nature of Tuberculin Reaction. (Tuberkuloseantikörper.) J. Citron.
123 Symmetrical Enlargement of Lachrymal and Salivary Glands and Its Relation to Syphilis. (Mikulicz'sche Krankheit.) A. Gutmann.
124 Influence of Atoxyl on Relapsing Fever. (Einwirkung des Atoxyls auf den Verlauf des Rückfallfiebers.) J. Glaubermann.
125 "Mongolian Spot" in Two Berlin Infants. (Mongolenkinderfleck.) G. Tugendreich.
126 Nutritive Anemia. Rollin.
127 Mortality of Acquired Syphilis. (Lebensprognose des Syphilitikers.) C. Bruhns.

93. **Primary Cancer in Appendix.**—The case described confirms previous experience in regard to the benign course, simulating ordinary appendicitis, the youth of the patients, and the complete recovery after removal of the affected and adherent parts. The patient was a girl of 19, with bilateral pyosalpinx. The case is said to be the seventieth of primary cancer of the appendix on record. [Weber reported a case recently in the *St. Petersburg. med. Wochschr.* Attacks of acute appendicitis recurred several times a year until an appendicular abscess was evacuated in 1904; but dull pain in the region persisted, and two years later a tumor was discovered, an adenocarcinoma of the appendix. The patient was a man of 43.—ED.]

94. **Insufficiency of the Vertebræ.**—Under this heading Schanz describes an affection of the spine in which the patients complain generally of stomach or bowel trouble, dyspepsia and constipation, loss of appetite and pains in the stomach, chest or pelvis. Usually no spontaneous mention is made of pains in the spine, but tapping the spine caused pain at one or more points and pressure on the lumbar vertebræ through the abdomen also elicits pain. On continuing the pressure until the pulse in the aorta is arrested, the pain becomes intense but ceases at once when the spine and aorta are released from pressure. Tenderness will sometimes be found in the ribs and pelvis corresponding to the sensory nerves emerging from the painful sections of the spine. On the other hand, no findings except the above can be detected that suggest a pathologic process except that the patients do not hold themselves so erect as they used to, and one shoulder or hip may be a trifle higher than the other. Physical or mental effort and emotions aggravate the condition, while it is improved by repose. As a rule it will be found that the first disturbances were noted during a period of depressed vitality, after a long illness, trauma or anemia. His patients were mostly between 20 and 45, but the affection is by no means restricted to this age. He points out the close analogy with the disturbances in flat foot, and states that since he has been treating it along the same lines as the latter, he has succeeded in curing all his patients. None was cured so long as he limited his treatment to rest and a supporting corset, but the affection yielded in time when these measures were supplemented by massage and exercises.

95. **Early Diagnosis of Syphilis of the Heart.**—Herzog emphasizes the importance of bearing syphilis in mind when confronted with a case of insufficiency of the aorta or any heart affection in a comparatively young person without a history of articular rheumatism. He relates a number of cases of various types of syphilitic affections of the heart in which remarkable benefit followed tentative mercurial treatment.

101. **Perforation of Non-Gravid Uterus.**—A case is reported in which, during very cautious curetting, the Sims curette perforated the wall of the uterus. The lips of the perforation closed up at once and the bleeding was minimal. Heymann reviews sixty-three other cases from the literature, all teaching the importance of recognizing the perforation at once so that intrauterine irrigation will be at once discontinued. Rest, ice and opium should be the rule for instrumental perforation when no operation is contemplated otherwise. If the perforation is the work of a rinsing instrument, total extirpation should be done at once or colpocelio-tomy with suture of the perforation and drainage through the pouch of Douglas. The experience to date has been bad with other measures. Instrumental perforation is liable to occur with the most skilful technic, and the physician can not be held to blame, but it is a serious and frequently a disastrous blunder if the perforation is allowed to occur without prompt recognition of the mishap.

105. **Aberrant Nerve Fibers in Facial Paralysis.**—Lipschitz reports six cases of facial paralysis in which he was able to detect a response to electric stimuli in regions where such response is not normally obtained. He argues that this fact demonstrates the existence of aberrant nerve fibers, adding that these aberrant fibers may explain the phenomena of regeneration of nerves after their division and reconcile the opposing views of Cajal and Bethe on this subject.

110. See editorial in THE JOURNAL, this issue.

118. **Gonorrheal Pyelitis.**—Sellei and Unterberg found that gonorrheal pyelitis generally healed under rest and internal measures; but in old, refractory cases they found it necessary to rinse out the kidney pelvis once or twice a week with a 1 to

1,000 silver nitrate solution, through the ureter catheter. This effected a cure in every instance. In one patient the effect of even a single injection was most striking. The trouble is generally mixed infection, even when gonococci can be cultivated from the kidney pus.

Centralblatt für Chirurgie, Leipsic.

August 31, XXXIV, No. 35, pp. 1025-1056.

128 *Resection of Infraorbital Nerve. W. Dreesmann.
129 Gangrene of Retrograde Incarcerated Loop of Intestine. (Gangrän der retrograd inkarz. Darmschlinge.) O. Klauber.
130 *Treatment of Post traumatic Granulating Wounds with Constriction Hyperemia. (Behandlung der Wunden mit der Stauungsbinde.) A. Gregory.

September 7, No. 36, pp. 1057-1080.

131 Retrograde Incarceration of Intestine. (Retrograd Inkarz. des Darmes.) Jenckel.

128. **Resection of Infraorbital Nerve.**—Dreesmann describes the technic with which he has successfully resected the infraorbital nerve in two patients with comparative ease and excellent cosmetic results.

130. **Treatment of Granulating Wounds with Constriction Hyperemia.**—Gregory applied the constricting band as a last resort in three cases of crushing injuries of the foot or leg which absolutely refused to heal after weeks and months of varied treatment. The effect was apparent almost at once, and the wounds cleaned up and soon healed over.

Centralblatt f. Gynäkologie, Leipsic.

August 31, XXXI, No. 35, pp. 1049-1072.

132 Case of Interstitial Tubal Pregnancy. Perforation by Sound Introduced through Uterus into Tube. (Interstitielle Tubenschwangerschaft.) A. Rieck.
133 Incarceration of Prolapsed Bladder in Vesicovaginal Fistula. (Inkarzeration der vorgefallenen Blase.) W. S. Grouzdew.
134 *Childbirth with Uterine Myoma. (Geburten bei Gebärmuttermyomen). W. Rubeska.
135 Splitting of Albumin in Fetal Intestine. (Eiweissabbau im Fötus.) E. Jaeggy.

September 7, No. 36, pp. 1073-1104.

136 *Statistics of Operations for Prolapse of Pelvic Viscera. J. Scharpenack.
137 Chemistry of the Placenta. A. Rieländer.

134. **Child-Birth with Uterine Myoma.**—Rubeska found a very large myoma on the rear wall of the cervix in a primipara at term. After a few hours of ineffectual labor the abdomen was opened in the median line, the uterus drawn up, and the myoma shelled out of its nest. Only a thin layer of cervix wall was left over the presenting head of the child, but the uterus was replaced after ligation and suture of the bleeding vessels. As the fetal heart sounds were growing slower by this time, an assistant delivered the child, aided by pressure from above on the uterus. The cavity left by the myoma was then sutured and three small myomas on the uterus were shelled out likewise. The afterbirth was then expelled and the abdominal wound sutured, and two lacerations in the wall of the cervix were sutured. All the wounds healed by primary intention. Four other cases are described to show the varied indications in different cases of uterine myoma.

136. **Operation for Prolapse of Pelvic Viscera.**—Scharpenack reviews the experiences at the Leipsic clinic with 100 cases of prolapse of uterus or vagina or both, especially with the Wertheim-Schauta technic. He commends it for general adoption, even in case of slight prolapse. Conception is prevented by the operation, but the sexual apparatus is not otherwise interfered with, menstruation continuing undisturbed.

Deutsches Archiv f. klinische Medizin, Leipsic.

August, XCI, Nos. 1-2, pp. 1-224. Last indexed, October 5, p. 1230.

138 The Balance of Water in the Blood. (Wasserbilanz des Blutes.) I. Plehn.
139 Creosote and Lysol Poisoning. (Vergiftung.) H. Boruttau and E. Stadelmann.
140 Nephritic Edema. Schlayer, Hedinger and Takayasu.
141 Experimental and Histologic Research on Hypertrophy of the Heart. (Herzhypertrophie.) E. Stadler.
142 Disturbances in Spinal Temperature Sense. (Spin. Temperaturs innesstörungen.) E. Hesdörffer.
143 Criticism of His' Quantitative Test for Uric Acid. (Harnsäurebestimmung.) A. Nicolaier and M. Dohrn.
144 Blood Pressure Under Sudden Violent Exertion and During Valsalva's Experiment, and the Changes in the Size of the Heart Thereby. (Blutdruck, Herzgrösse, etc.) E. Bruck.
145 *Polymyositis. E. Gottstein.
146 Distribution of Proteolytic Leucocyte Ferment and Its Antiferment in Urine, Blood and Sputum in Croupous Pneumonia. A. Bittorf.

145. **Polymyositis.**—Gottstein reports a case distinguished by the close connection with acute articular rheumatism. The patient was a young man with an evident alternation of joint and muscle affections on the same basis, complicated further by pleurisy and myocarditis. Notwithstanding this apparent intimate connection between the rheumatism and the polymyositis, no relief was obtained from the salicylates, but unmistakable benefit followed the continuous bath. Others have reported benefit from application of heat, although in different forms, as vapor baths and thermomassage. The myositis had been preceded three years before by a severe dermatomyositis.

Deutsche Zeitschrift f. Chirurgie, Leipsic.

Aug., LXXXIX, Nos. 5-6, pp. 401-640. Last indexed, Oct. 5, p. 1232.

147 Lessons from Twenty-three Prostatectomies. R. Göbell.
148 *Malignant Tumors of the Nose. (Malignen Tumoren der inneren Nase.) L. Harmer and E. Glas.
149 *Deforming Hip-Joint Disease. G. Preiser.
150 *Idiopathic Juvenile Deforming Osteoarthritis of the Hip. (Eine kongenitale Dysarthrie?) Id.
151 *Successful Operation for Septic Thrombosis of the Mesenteric Veins. F. Brunner.

148. **Malignant Tumors of Nasal Fossæ.**—Harmer and Glas regard the question of transformation of a polyp into a cancer as probable, but "not proven," to date. Empyema in the maxillary sinus masked the presence of cancer in three cases in their experience at Chiari's clinic in Vienna. The rapid growth of a tumor in the septum suggests sarcoma, a slow growth a tuberculous process. Cylindromas are slower in development than other varieties of malignant tumors, and frequently remain limited to the point of origin, without tendency to metastasis. During the last few years, thirty-two malignant tumors of the internal nose have been observed. One patient has had no recurrence to date, eighteen months since removal of a cylindroma, and another after the same interval since a second operation for removal of a round-celled sarcoma. Two other patients with sarcoma are still in good health several months since the operation, and two others after removal of carcinoma. More than a hundred pages are devoted to this comprehensive study of malignant disease of the internal nose.

149 and 150. **Deforming Hip Joint Disease.**—Preiser's history of his experiences, and his skiagraphs, show that the trochanter may be forced up by an abnormal position of the acetabulum in a sound joint, and that this should not be regarded as pathognomonic of disease. The neck of the femur may be abnormally short or the acetabulum may be back of or medial to the Roser-Nélaton line. This lack of normal proportions is liable to entail "idiopathic" arthritis deformans of the hip joint, which he thinks is always a secondary affection, and can not occur without abnormally high position of the trochanter. It may appear first as a chronic, constantly recurring sciatica, the joint symptoms being inconspicuous. As the affection involves first the capsule and cartilage, Roentgen diagnosis is impossible in the early stages. When in addition to the sciatica there are pains in the knee and thigh, a hip-joint affection should be suspected. Arthritis deformans may occur at any age and on one or both sides. Resection of the head of the femur does not give such good results in treatment of arthritis deformans as Lorenz' technic of "inversion for correction of defective hip joints," supplemented by physical measures. In case of high trochanter, the lateral condyle of the tibia generally projects laterally under the condyle of the femur, as much as 1.5 cm. in extreme cases. As this anomaly is encountered regularly also with arthritis deformans, it is possible that it may have some causal connection with it.

151. **Recovery After Operation for Septic Thrombosis of Mesenteric Veins.**—Brunner states that 2 patients are reported as cured out of 26 operated on for occlusion of the mesenteric arteries in a total of 125 known cases of the kind. Reports of about 89 cases of venous thrombosis have been published, with operative treatment in 31 and recovery of 4 of the patients. He adds a fifth case of successful operative treatment to this list. The patient was a man of 62, in serious danger not only from the thrombosis and its consequences, but from the accompanying sepsis. The presumptive diagnosis from the chills, fever, tumor and stenosis had been carcinoma of the sigmoid flexure with suppuration and septic phlebitis.

Münchener medizinische Wochenschrift.

August 27, LIV, No. 35, pp. 1713-1760.

152 *Lung Suction Mask and Its Influence in Improving Condition of the Blood, and Its Relations with Mountain Climate. (Lungensaugmaske.) E. Kuhn.
153 Experimentally Induced Change of Mouse Carcinoma into a Benign Adenoma. (Rückschlag von Mäusekarzinom in den histologischen Typus des Adenoms.) H. Apolant.
154 Cultivation of Typhoid Bacilli from Blood on Bile Agar. (Züchtung der Typhusbaz. aus dem Blute auf Gallenagar.) W. Schüffner.
155 Internal Friction of Blood Serum in Morphinized Animals. (Innere Reibung des Blutserums.) M. Segale.
156 Lipolysis, Agglutination and Hemolysis. Third Communication. C. Neuberg and K. Reicher.
157 Stomach Affections in Chronic Lead Poisoning. (Erkrankungen des Magens bei der chron. Bleivergiftung.) K. Walko.
158 *Treatment of Dysmenorrhea. O. Polano.
159 Suppuration in Ethmoidal Cells. (Seibbeinzelleneiterung.) E. Köhler.
160 Disadvantages of Pressure Bandage in Detachment of Retina. (Druckverband in der Therapie der Netzhautablösung.) G. Freytag.
161 Use of Tissue Paper for Handkerchiefs and Napkins in Contagious Diseases. (Verwendung des Seidenpapiers in der Krankenpflege.) Hillenberg.

September 3, No. 36, pp. 1761-1808.

162 Experiences with Tulase in Treatment of Tuberculous Eye Affections. (Behringsche Tulasepräparaten bei der Behandlung tub. Augenerkrankungen.) R. Collin.
163 Plea for Smaller Dosage in Roentgen Treatment. (Verwendung kleinerer Dosen von Roentgenstrahlen in der Therapie.) H. Rieder.
164 Hitherto Undescribed Bacterium in Typhoid Cases. M. Mandelbaum.
165 Experimental Research on Action of Bier's Constriction Hyperemia on Inflammatory Processes. (Wirkung der Bier'schen Stauung.) F. Honigmann and J. Schäffer.
166 Origin of Pulmonary Tuberculosis. (Entstehung der Lungentub.) H. Strassner.
167 Study of Laryngeal Symptoms in Tabes, in 236 Cases. (Kehlkopfsymptome bei Tabes dorsalis.) Graeffner.
168 Pathology of Early Stages of Appendicitis. (Frühstadium der App.) A. Peiser.
169 *Appendicitis and Carcinoma in Appendix. C. E. Brandts.
170 Does Human Milk Induce Hemolysis? (Hämolysiert die Frauenmilch?) G. Frey.
171 *Formaldehyd-Lime Process for Disinfection of Rooms. (Formaldehyd-Kalkverfahren zur Raumdesinfektion.) Huber and Bickel.
172 *Ligation of Auricle for Stab Wound of Heart. (Herzchirurgie.) H. Meerwein.
173 Severe Acute Anemia After Acute Articular Rheumatism. G. Mann.
174 League of Friends of Specific Treatment of Tuberculosis. ("Freie Vereinigung von Freunden der spezifischen Tuberkulosetherapie.") F. Köhler.

152. **Improvement in Composition of Blood Under Influence of Lung Suction Mask, and Relation to Mountain Climate.**—Kuhn is assistant at von Leyden's clinic, and a year or so ago called attention to the advantage of a method of inducing passive hyperemia in the lungs by restricting the intake of air while allowing ample outlet. His communication was summarized in THE JOURNAL Oct. 27, 1906, page 1423. The mask is of light celluloid and an adjustable valve shuts off some of the air entering through the mask. The lungs thus receive less than their usual quota, while the unhindered expiration induces a degree of negative pressure, the effect being similar to that obtained with the Bier suction hyperemia therapy. The effect is also analogous to the conditions of respiration at high altitudes where the lungs do not obtain their usual quota of air owing to the rarefaction of the atmosphere. He has found the application of the "lung suction mask" an important aid in treatment of pulmonary tuberculosis, the hyperemia induced in the lungs having a marked therapeutic action and promoting healing of the tuberculous process. The benefit is remarkable, he asserts, not only on the local process, but also on the general health and especially on the composition of the blood. He cites a number of tracings to show the invariable increase in the number of both red and white corpuscles and proportion of hemoglobin observed after every application of the mask. This improvement in the condition of the blood becomes more and more marked and continuous—exactly as observed in a trip to the mountains. The improvement in the blood occurred regularly in all but two patients, and one of these was found to be suffering from intestinal hemorrhage and the other from exceptionally protracted and profuse menses. He has found the mask useful also in treatment of anemia in case the bone marrow is still capable of responding to stimulation. When the blood does not improve under the suction mask, the anemia is evidently of complicated and serious origin. He applies the mask for an hour or two every day. The suction draws more blood to the lungs and promotes also the circulation of lymph through the parts—all factors favoring healing.

158. **Treatment of Dysmenorrhea by Way of Mammæ.**—Polano refers to the antagonistic physiologic action of ovaries and mammæ. When the former are doing extra work the latter are resting, as we see in pregnancy and parturition. Menstruation can be regarded as a process started by biologic forces in the ovaries, and its intensity, he thinks, can be regulated by measures depressing these biologic ovarian forces. The physiologic work of an organ is dependent on its blood supply, and artificially induced hyperemia is thus a simple means to stimulate it to extra functioning. He has treated a number of patients with dysmenorrhea by applying these principles, seeking to reduce the work of the ovaries by stimulating the mammary glands with suction hyperemia. The results have surpassed his expectation in a number of cases which showed no benefit under other treatment. A few days before the menstrual period a suction glass is applied to each breast as for treatment of mastitis. Air is aspirated with a syringe until the breast is drawn out, stopping short of the slightest pain. The glass is left in place for half an hour, removing and replacing it once during this time. The procedure is repeated daily and continued till the last day of the period. The hyperemia of the breast persists for some hours; the period is shortened and the flow of blood lessened while the intervals are lengthened. The influence was apparent in every case in which the treatment was applied, but varied in intensity. One of the patients thus restored to physiologic conditions was a girl of 18 whose menses, extremely profuse, recurred every two weeks and lasted for eight days. Polano has also found the suction hyperemia an important aid in restoring lactation in wet nurses when the mammary glands seemed to give out.

169. **Carcinoma in Appendix.**—Brandts reports two cases of supposed appendicitis in which the trouble was found to be perforation from a cancerous growth in the appendix. He remarks that if the appendix were examined for cancer more frequently the proportion of positive findings would be surprisingly larger.

171. **Formaldehyd-Lime Disinfection.**—Huber and Bickel report exceptionally satisfactory results in disinfection with a mixture of 3 liters of formeldehyd, 3 kg. of freshly burnt lime and 9 liters of boiling water, for each 50 cm. of space. The lime is placed in a wood or metal vessel, with a capacity of 80 liters, the water is poured over it and the formaldehyd added. The room is soon filled with a thick vapor and the chemical action continues for about six hours. If the room is to be used soon, a vessel containing 1 kg. of lime, 3.5 liters of boiling water and 0.5 liters ammonia for each 50 cm. of space is introduced into the room, and in fifteen minutes it is ready to be aired. A little of the formaldehyd combines with the lime, but not much is thus lost, and the lime left in the vessel can be used to disinfect stools, privies, etc. The formaldehyd-lime technic is recommended as a simple, cheap, harmless and useful substitute for the ordinary spray technic when there are objections to the use of the latter.

172. **Surgery of the Heart.**—Meerwein states that in the 120 cases of operative treatment of the heart on record, mention is made of only one case of injury of an auricle. He reports a second case, and states that it is the first in which a stab wound of the auricle was treated by ligation. The lower part of the left auricle, including the wound, was drawn out and tied around with a stout thread. This was done sixteen hours after the injury, and was followed by rapid recovery.

Therapie der Gegenwart, Berlin.

February, XLVIII, No. 2, pp. 49-96. Last indexed, June 22, p. 2169.

175 *Intraneural Antitoxin Treatment of Tetanus. E. Küster.
176 *Treatment of Thirty Patients with Epidemic Cerebrospinal Meningitis with Meningococcus Serum. (Behandlung von 30 Genickstarrkranken mit Jockmann'schen Men.-Serum.) C. Schöne.
177 Medicinal Treatment of Acute Cardiac Insufficiency. (Med. Behandlung der akuten Herzinsuffizienz.) A. Fraenkel.
178 Course of Feeding in Pulmonary Affections. (Ernährungskur Lungenkranker.) A. Moeller.
179 The Finsen Institute and Technic at Copenhagen. Nuesse.

March, No. 3, pp. 97-144.

180 *Arteriosclerosis and Its Treatment. H. Senator.
181 Therapeutic Value of Addition of Resin to Wine.—(Geharzter Wein.) W. N. Clemm.
182 Influence of Turkish Clotted Milk on Intestinal Flora. (Beeinflussung der Darmflora durch Yoghurt.) Löbel.
183 Mental Disturbances and Pregnancy. (Psychose und Schwangerschaft.) O. O. Fellner.
184 Gonorrhea Statistics. (Tripper beim Mann, etc.) G. Berg.
185 Improved Pack for the Chest. (Brustumschlag.) Leusser.

April, No. 4, pp. 145-192.

186 The Conflict with Tuberculosis. (Tub.-bekämpfung.) E. v. Behring.
187 Salt and Salt-free Diet. (Kochsalz und salzlöse Diät.) A. Magnus Levy.
188 Oxygenated Baths. (Ozetbäder.) Schnütgen.
189 *Intercostal Neuralgia. W. Janowski. (Commenced in No. 3.)

May, No. 5, pp. 193-240.

190 Treatment of Bronchial Asthma. P. Fürbringer.
191 The Biologic Test Applied to Infant Feeding. (Ergebnisse der biol. Methode für die Lehre von der Säuglingsernährung.) A. Uffenheimer.
192 Treatment of Retention of Urine from Enlarged Prostate by Suprapubic Fistula plus Fixation of Bladder. (Urinretention bei Prostatahypertrophie.) R. Mühsam.

175. **Intraneural Injection of Antitetanus Serum.**—In 1905, Küster reported a case of local tetanus in which he injected antitoxin into the trunk of the nerve, with prompt recovery of the patient. He here reports a second case of intraneural injections followed by recovery—the fifth on record. He regards the intraneural technic as safer and more reliable than injecting the antitoxin directly into the brain or spinal canal, when the symptoms are localized in the region affected. If general intoxication has already set in, evidenced by trismus, then he advises supplementing the intraneural injection by injections of antitoxin into the spinal canal. On the other hand, the spinal route is advisable, he believes, when the portal of entry is not known with certainty and there are no local symptoms. The spinal injections are made by the same technic as for spinal anesthesia, and the injections can be repeated as deemed desirable. He advocates only a single injection when the antitoxin is injected directly into the nerve trunks of the region. Another injection can be made farther up the nerve at the same time, but repeated injections would only injure the nerve and make it more sensitive to injurious influences.

176. **Serum Treatment of Meningitis.**—Schöne reports that 18 patients with epidemic cerebrospinal meningitis responded with prompt recovery, while in 2 others the fever disappeared under the influence of partial treatment. The mortality among 36 patients who were not given serum treatment was 53 per cent., while it was only 27 per cent. among the 30 who received the serum injections. No appreciable by-effects were noted except urticaria, or pains in the limbs in 4 patients.

180. **Arteriosclerosis.**—Senator is inclined to attribute considerable importance to intestinal autointoxication as a causal factor in arteriosclerosis. Carbohydrates and fats should be the main diet, avoiding nitrogenous foods. A milk-vegetable diet has the additional advantage that it renders the blood more fluid. This effect also follows the use of iodids, which probably act directly also on the walls of the arteries. This action can be promoted by addition of nitrites. A favorite prescription is

℞.

Potassii vel sodii iodi	7		3ii
Sodii nitritis	1.5	or	grs. xxiv
Aquæ q. s.	200		fl℥vii

M. et sig.: One tablespoonful three times a day in milk.

Another favorite prescription is:

℞.

Tincturæ iodini	1	or	m. xv
Spiritus ætheris	30		fl℥i

M. et sig.: From 20 to 30 drops three or four times a day.

For some cases he prefers the following:

℞.

Spiritus glycerylis trinitratis	1	or	gr. iss
Spiritus ætheris	30		fl℥i

M. et sig.: From 15 to 20 drops three or four times a day.

The arteries can be dilated and the blood pressure reduced by hydrotherapy, carefully individualizing, and with constant control of the heart action. He prefers carbonated baths for the purpose.

189. **Intercostal Neuralgia. Its Importance and Treatment.**—Janowski asserts from an experience of 550 cases of intercostal neuralgia, that nearly every patient can be cured by systematic determination of the painful points and application to these points of a cantharides plaster. He reports success with this treatment in 96 per cent. of his cases. His article is devoted mainly to the various manifestations and consequences of the intercostal neuralgia as it simulates many diverse affections. He has observed it at all ages. The neuralgia was on the left side in 71 per cent. of 280 cases, and bilateral in 13 per cent. A preceding infection or emotional stress favors its production, and it is easily diagnosed by palpating the intercostal spaces throughout their entire length and locating points where pressure is painful, separated by stretches of normal sensibility. The cantharides plaster is to be applied to the painful points only. In 90 per cent. of the cases, the patient was strikingly relieved even by the first applications of the plaster. The patients complained sometimes of pain in the side, shoulder or lumbar region, in the lungs or elsewhere, and some described their trouble as a vague disturbance—not pain—which excited and distressed them. In 6 cases the radiating pains had been so intense that the skin was hypersensitive all over the body, and the correct diagnosis was not possible until after a course of sedatives. In 7 cases the pain occurred always in the left shoulder; the most painful points in these cases were about 3 or 4 fingerbreadths from the spine and about 1½ fingerbreadths from the trapezius. Six other patients complained of pain in the arm alone, 5 of pain in the mammæ, and 77 of pain and disturbances in the heart, simulating heart disease. The complaints in the last group of cases were of palpitation, pain in the cardiac region, skipping and galloping heart action, assumed cardiac neurosis, simulated angina pectoris and simulated pseudo-angina pectoris in younger individuals. Prompt differentiation of the intercostal neuralgia saves these patients an infinite amount of worry. Other patients with intercostal neuralgia exhibited symptoms suggesting a stomach affection, even to nausea and vomiting. Others presented symptoms simulating a gallstone affection, a movable kidney or kidney stone. Obstinate pain in the sacral or lumbar region and abdominal colic were also observed as the sole manifestation of intercostal neuralgia, as also vague distress or excitement, without localized pains. In conclusion, Janowski describes a group of cases in which the intercostal neuralgia was superposed on some actual organic trouble elsewhere. The two following issues contain each a brief note corroborating Janowski's statement in regard to the frequency and importance of intercostal neuralgia, commending in the treatment massage, alcohol rubs, electricity and blisters.

Correspondenz-Blatt f. schweizer Aerzte, Basle.

July 1, XXXVII, No. 13, pp. 393-424. Last indexed, Sept. 7, p. 837.

193 *Use of Hyperemia in Treatment. C. Schlatter.

July 15, No. 14, pp. 425-456.

194 Alveolar Echinococcus. O. Teutschlaender.

August 1, No. 15, pp. 457-488.

195 Necessity for Examining the Eyes of Children on Entering School and Relation of Astigmatism to Myopia. (Notwendigkeit die Augen der schulpflichtigen Kinder vor dem Schuleintritt untersuchen zu lassen.) E. Siegrist. Commenced in No. 14.
196 *Value of the Indigo-Carmin Test of Kidney Functioning. (Indigocarminprobe.) F. Suter.
197 Superheated Air in Local Treatment of Hay Fever. (Heuschnupfen.) Hürlimann.

August 15, No. 16, pp. 489-528.

198 Old, Irreducible Dislocation of the Knee. (Kniegelenksluxationen.) H. Iselin.
199 *Insurance of Physicians Against Accidents. (Unfallversicherung der Aerzte.) H. Ziegler.

193. **Hyperemia in Treatment.**—In 250 cases of various kinds Schlatter has applied Bier's method of artificially induced hyperemia by superheated air, suction or a constricting band. The prompt relief from pain that follows application of the constricting band was particularly evident in some cases of suture of tendons. Although there were no signs of inflammation, he applied the constricting band to relieve the intense pain. In one case it was kept on for two days, and as soon as it was removed the pains recurred, subsiding again as the constriction was resumed. It proved particularly useful

in aborting incipient inflammations, but can not, he says, be counted on as a strict bactericidal agent.

196. **Indigo-Carmin Functional Kidney Test.**—Suter applied this test in 37 cases before operating, and also on a number of healthy individuals. Operations performed according to the indications from the response to the test always proved successful, the list of thirty-five nephrectomies and two nephrotomies not showing a single fatality. The indigo-carmin test was described and illustrated in THE JOURNAL, Jan. 2, 1904, page 69.

199. **Insurance of Physicians Against Accidents.**—Ziegler has been studying the records of a Swiss accident insurance company in respect to the physicians who have been policy holders. He finds that a much larger proportion of physicians met with accidents than members of any other profession or officials or overseers in trades. In 23,437 policies, representing 145,106 years of insurance, 12,347 accidents were recorded, and the proportion is 53.6 per cent. of the policies and 6.2 per cent. of the years insured for men of other professions and trades, while it is respectively 76.8 per cent. and 12.3 per cent. for medical men. The percentage of injuries terminating fatally was 0.62 per cent. for physicians and 0.427 for other men; those leaving permanent disability: physicians, 2.054 and others 1.9, while the proportion of transient disability was about the same for physicians and others, 97.33 and 97.66. Accidents to the arms were exceptionally frequent as a cause of disability among physicians; over 26 per cent. of all accidents to physicians occurred in connection with driving or motoring, and 26.53 per cent. occurred during the exercise of their profession, infection from operation, explosion of apparatus, etc. Direct injuries from a patient's blow or scratch occurred in 0.65 per cent. Overexertion in the practice of the profession is recorded as requiring indemnity in 0.48 per cent., and accidents during sport in 1.98 per cent.

Hospitalstidende, Copenhagen.

February 27, I., No. 9, pp. 229-252. Last indexed, March 9, p. 913.

200 *Chronic Rheumatic Infiltration of the Muscles. (Muskelinfiltrater.) P. Lorenzen.

March 6, No. 10, pp. 243-276.

201 The Guaiac Test for Invisible Blood. (v. Deens og Webers Prøve.) K. Schroeder.

March 20, No. 12, pp. 309-340.

202 *Syphilitic Spinal Paralysis (Erb). A. Wimmer.

March 27, No. 13, pp. 341-364.

203 *Phlebitis Occurring Under Biers' Constriction Hyperemia. (Stasehyperæmi.) I. Collin.

April 3, No. 14, pp. 365-388.

204 A New Saccharimeter. L. E. Walbum.

April 17, No. 16, pp. 409-428.

205 Kroenleins Resection of Orbit. K. K. K. Lundsgaard.

April 24, No. 17, pp. 429-452.

206 Direct Inspection of Lower Pharynx. (Hypopharyngoskopi.) P. T. Hald.

May 1, No. 18, pp. 453-484.

207 New Syringe for Injecting Paraffin. (Paraffinsprøjte.) V. S. Stein.

208 Pneumatic Insoles for Flat Foot. (Pneumatiske Platfodsinlæg.) L. Bramson.

May 15, No. 20, pp. 509-532.

209 Scotoma scintillans. A. Gad.

210 Dislocation of the Wrist. (Luxatio ossis lunati.) K. Poulsen. (Commenced in No. 19.)

May 22, No. 21, pp. 534-564.

211 After fixation of Formol Specimens. (Efterfixering af Formolpræparater.) F. C. C. Hansen.

212 Weakly Children and Raw Milk. (Spæde Børn og raa Melk.) O. Lendrop.

May 29, No. 22, pp. 565-588.

213 *Traumatic Aneurisms. V. M. Westergaard.

June 5, No. 23, pp. 589-612.

214 Test for Controlling Thermometers. (Kontrollering af Lægetermometre.) R. K. Petersen and H. Giese.

June 12, No. 24, pp. 613-636.

215 Fracture of Tubercle of the Tibia. (Fractura tuberositatis tibiæ.) J. Jensen.

216 Kresylviolet and van Gieson Stain. (Farvning med Kresylviolet.) V. Jensen.

200. **Chronic Rheumatic Infiltrates in Muscles.**—Lorenzen calls attention to the frequency and variety of symptoms induced by chronic rheumatic muscular affections, especially old infiltration. He thinks that the clothing is responsible for them to some extent; the weak point in men's clothing, the exposure of the parts between the vest and trousers, probably contributes to the predominance of muscular affections in this region in men, while in women the neck and shoulders are more frequently affected. Infiltration of a muscle is liable to cause a number of disturbances, which he reviews in turn, including, he asserts, flat foot. The diagnosis depends mainly on the palpation findings in the affected muscle and adjoining connective tissue, seeking also for signs of perineuritis, which is particularly liable to occur along the sciatic and cranial nerves. Incipient sarcoma may simulate infiltration, and varicose veins may be mistaken for infiltration in the connective tissue, and frequently accompany the latter. Differentiation is difficult when the infiltration is in the rectus or oblique abdominal muscles. Treatment should be with general antirheumatic measures, supplemented by local massage or systematic exercise of the muscles involved with mechanical appliances.

202. **Syphilitic Spinal Paralysis.**—Wimmer reports three cases with the autopsy findings in two.

203. **Phlebitis Occurring Under Bier's Stasis Therapy.**—Collin relates a case of a streptococcus local process over the patella which spread until arrested by a constricting band applied to the upper third of the femur. This had an unmistakably favorable effect in arresting and promoting the healing of the local process, but the constriction was followed by the development of phlebitis in the superficial veins. He regards the constriction as probably responsible for this complication.

213. **Traumatic Aneurisms.**—Westergaard gives the details of a case of aneurism of the femoral artery and one of the subclavian artery, both treated by extirpation of the aneurism with good results. A stab wound of the leg was responsible for the first aneurism, but the other was the result of compression of the artery by an exostosis on the first rib.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

DISEASES OF THE GENITO-URINARY ORGANS AND THE KIDNEY. By Robert Holmes Greene, A.M., M.D., Professor of Genitourinary Surgery, Medical Department of Fordham University, etc., and Harlow Brooks, M.D., Assistant Professor of Pathologic Anatomy, University and Bellevue Hospital Medical College. Illustrated. Cloth. Pp. 536. Price, $5.00. Philadelphia: W. B. Saunders Co., 1907.

HEART DISEASE AND BLOOD PRESSURE. A Practical Consideration of Theory and Treatment. By Louis Faugeres Bishop, A.M., M.D., Clinical Professor of Heart and Circulatory Diseases, Fordham University School of Medicine, New York City, etc. Second Edition. Cloth. Pp. 120. Price, $1.00. New York: E. B. Treat & Co., 1907.

OBSTETRICS. A Text-book for the Use of Students and Practitioners. By J. Whitridge Williams, Professor of Obstetrics, Johns Hopkins University. Second Enlarged and Revised Edition. Illustrated. Cloth. Pp. 950. Price, $6.00. New York: D. Appleton & Co., 1907.

TRYPANOSOMES AND TRYPANOSOMIASIS. By A. Laveran and F. Mesnil. Translated and Enlarged by David Nabarro, M.D., B.Sc., etc., Member of the Royal College of Physicians, London. Illustrated. Cloth. Pp. 538. Price, $7.50. Chicago: W. T. Keener & Co., 1907.

ANTISEPTIC AND GERMICIDAL PROPERTIES OF SOLUTIONS OF FORMALDEHYD and Their Action on Toxins. By John F. Anderson. Hygienic Laboratory Bulletin No. 39. Paper. Pp. 48. Washington: Government Printing Office, 1907.

YELLOW FEVER, ETIOLOGY, DIAGNOSIS AND SYMPTOMS. By Joseph Goldberger. Yellow Fever Institute, Bulletin No. 16. July, 1907. Paper. Pp. 30. Washington: Government Printing Office, 1907.

DIET IN TYPHOID FEVER. Fiske Fund Prize Dissertation. No. L. Motto "Jobeni." By John Benjamin Nichols, M.D., Washington, D. C. Paper. Pp. 92. Providence, R. I., Snow and Farnham, 1907.

REPORT OF THE SURGEON GENERAL OF THE ARMY to the Secretary of War for the Fiscal Year Ending June 30, 1907. Paper. Pp. 181. Washington: Government Printing Office.

THIRTY-FOURTH ANNUAL REPORT of the Hospital of the Good Shepherd, Syracuse, N. Y., for the Year Ending Oct. 1, 1906. Paper. Pp. 40. Syracuse: Lyman Bros., 1907.

REPORT OF THE GOOD SAMARITAN HOSPITAL of Cincinnati, for the Year Ending Dec. 31, 1906. Paper Pp. 24.